

THE
AMERICAN FARMER:
DEVOTED TO
AGRICULTURE, HORTICULTURE AND RURAL ECONOMY.
(FIFTH SERIES.)

"O FORTUNATOS NIMIUM SUA SI BONA NORINT
"AGRICOLAS." *Verg.*

Vol. I.

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No. 5.

NOVEMBER—THANKSGIVING.

"All the blessings of the fields,
All the stores the garden yields.
Flocks that whiten all the plain,
Yellow sheaves of ripened grain.
Lord, for these our souls shall raise
Grateful vows and solemn praise."

"Clouds that drop their fattening dews,
Suns that genial warmth diffuse,
All the plenty summer pours,
Autumn's rich overflowing stores:
Lord for these our souls shall raise
Grateful vows and solemn praise."

"When thou hast eaten and art full, then thou shalt bless the Lord thy God, for the good land which he hath given thee. Beware that thou forget not the Lord thy God in not keeping His commandments, and His judgment, and His statutes: lest when thou hast eaten, and art full, and hast built goodly houses and dwelt therein; and when thy herds and thy flocks multiply, and all that thou hast is multiplied; then thine heart be lifted up, and thou forget the Lord thy God; and then say in thine heart, my power and the might of mine hand hath gotten me this wealth. But thou shalt remember the Lord thy God; for He it is that giveth thee power to get wealth."—*Deut. chap. 8.*

WORK FOR THE MONTH.

THE CORN CROP.

The gathering in of the crop of Corn will be now carried on expeditiously. It is liable to much waste in the field, and the earlier it is got under lock and key the better; due regard being had, of course, to its safety from heating in bulk. If the Corn has been allowed to remain on the standing stalks, it will be much sooner in order for the crib. Otherwise much caution must be used in putting away before cold weather.

PODDER.

The Corn crop makes a large body of valuable provender, which should be preserved, and used with the best economy for the stock. If the blades have been preserved, keep a sufficient quan-

tiny of them untouched for the spring and summer use of working horses. The stalks with leaves on should be fed away early in the season, that the unconsumed portion may be well trodden by the stock. The husks make valuable provender for working oxen; and all parts are good for milch cows.

FEEDING HOGS.

Do not now lose a day in pressing forward the hog-feeding. While we would urge by all means, where it can be done, both the grinding and cooking of the food of hogs, we hardly hope to see it practised generally, while fall work is pressing and it is so very convenient to throw in the whole ears. Much economy may be exercised, however, by feeding on plank floors and by soaking the ears in water a little salt. A little powdered sulphur occasionally is good for fattening hogs. Rotten wood or charcoal should be thrown freely into their pens. Do not feed immoderately when they are first put up, but feed so as to keep them in good appetite, and increase gradually until they have become accustomed to their change of life. After two weeks give them all they will eat until fat enough to kill.

BEVEES AND SHEEP.

The feeding of Bevees and Sheep intended for butchering should be carried on diligently if it is intended to get rid of them by the close of the year.

PREPARATION FOR WINTER.

Let your preparations for winter be promptly made, and have especial reference first of all to the comfort and health of your stock. This is your duty and your true economy. For all cattle sheds open to the south and west are sufficient protection and better for health than close, ill ventilated houses. They must be made to throw off the water perfectly, and be well supplied with dry straw, or other litter, for bedding. Working

Oxen, Milch Cows, and Calves should each have apartments where they may be fed separately. Horses should not be confined to stalls, but each one should have a box in which he may turn about at pleasure. Sheep should have shelter provided, which they may repair to at will in bad weather, and should have the range of a field, if convenient, where they may browse upon pine or cedar bushes. Hogs should be kept apart from other stock. A good shelter on a south hill-side and plenty of dry leaves for bed, is their most suitable accommodation: the range of a wood lot is desirable for them.

MANURES.

The next consideration in the preparation for winter, is with reference to the accumulation and saving of manures. Every thing that will make suitable litter for stock should be gathered for their pens. They should be got to their winter quarters early, and should spend much the greater portion of the time in the yards. The sheds should be provided with gutters to throw the water off from the yards, and every care and precaution should be used to make the best and largest quantity of manure. The fattening hog pens should be especially looked to on this point; the rich food they consume, and the imperfect preparation of it, makes this manure particularly valuable. The strength and value of manure is in exact proportion to the quality of food used.

WATER.

The next point of importance is water. If you have, as many persons have, a vague impression that water is of not much consequence to stock in cold weather, disabuse yourself of it at once. There is really more necessity for it in cold than in warm weather, for the reason that they are restricted to dry food now, whereas in summer all they eat is full of water. Nor will one drink a day do from an *extempore* hole in the branch, where the ice has been cut out for the purpose. Have some arrangement for water, either of pump, cistern or spring, by which it may be supplied conveniently three times a day. Learn to think of the wants of your cattle as you do of your own—you want drink at every meal, so do they. Their health requires that they should have their drink in moderate quantities at suitable times. Have water in their yards if possible. If the yards are as dry and comfortable as they should be, there is little occasion for cattle going out of them; when they do go out, see that they go only where you think they should go.

POTATOES.

Secure your Potato crop now with no loss of

time. A good potato plough will economise your labour very much, and will be paid for in digging two or three acres. Do not allow Potatoes to be exposed long to sun and air after digging, as their quality is soon affected by it, but as soon as the external moisture is dried off, put them in the cellar or in kilns. Avoid, if possible, digging when the earth is wet. Do not bury them in the ground, but put them in heaps carried to a point on top of the ground. Put 20 to 50 bushels together as may suit you. Select a thoroughly drained spot of sandy ground, if you have it, for this purpose. Use a large twist of straw or anything that will answer the purpose, placed in the centre of the heap and carried up to the top, to allow the moisture to pass off. Cover with a layer of dry straw first and then the earth. Before the setting in of severe weather, put on a second layer of straw and earth.

RUTA BAGA AND OTHER ROOTS.

Take these up in good weather and secure them as directed for potatoes. Beets and Carrots, intended chiefly for family use, had better go into the cellar. Parsnips should be left in the ground. Ruta Bagas will continue to grow till the ground freezes, and being much less affected by frost, will not require as much care as potatoes in preserving them.

WHEAT FIELDS.

All wheat seeding not yet finished should be despatched of course as early as possible. Do not sow now without a dressing of guano. With the frost, the fly, the rust and the weevil there is a bad chance for late sown grain. The guano gives November sown wheat an advantage equal to ten days of time.

WATER FURROWS.

Do not fail where it is necessary, in your wheat fields, to have good water furrows that will take off the water quickly. It is common to speak of the frost as killing wheat, or to say it is "winter-killed." It is much more proper to say "water-killed." Frost does wheat no harm, except where there is too much water, and when we come to realize this idea more distinctly we will be more likely to drain our lands properly.

UNDER DRAINING.

Whenever an opportunity allows, drain an land where wheat is liable to be winter-killed, if you wish it permanently improved. All other remedies and restoratives are worthless till this is done. Ditches 24 inches wide and 2½ to 3 feet deep, sloped to 6 inches at bottom, and filled with small stone or laid with tile, will render a service that hundreds of loads of manure would fail to effect without the drains.

TOBACCO.

Have Tobacco houses closed now except in very fine weather. Guard as far as you can against the freezing in the house of uncured leaves. Do not strip till the stems are thoroughly cured, but lose no "season" after it becomes fit. Early stripping is better for the quality of the crop, and very desirable that the work may not drag through the spring months.

ICE PONDS.

Get your Ice Ponds early in order. Cut off carefully all weeds and grass that would injure the ice. Let the water on early, especially if there be not a large supply, as the sides absorb a great deal, and it is important to have the pond full before freezing. Have the stream so arranged that it may be turned off after the pond is full.

WORK IN THE GARDEN.

NOVEMBER.

ASPARAGUS BEDS.

It is time now, if not already done, to give Asparagus Beds their winter dressing. Cut the tops off close to the ground, and carry them off the beds. Clear thoroughly of all weeds. Give the bed a good dressing of salt—whitening the ground pretty well with it. Then give a dressing on top of some two inches thickness of well rotted manure. That sown last spring for new beds should also have attention in the same way.

SPINAGE.

Keep the crop of Winter Spinage free of weeds, and if not sufficiently thinned heretofore, let it be done now.

LETTUCE.

Lettuce plants which you mean to set into cold frames should be attended to at once, and should be protected against freezing should the weather become cold, but in all moderate weather should have the benefit of the air.

CABBAGE AND CAULIFLOWERS.

If you have plants of these in frames, give them full benefit of the air in pleasant weather, but protect them against hard frost. If your plants are set in beds or borders, give them protection by making a sort of frame with fork and small poles, and lay over them a covering of cedar or pine brush, which will be at least twelve inches above the ground, and allow free course to the air. As regards protection of all plants, it is well to bear in mind that it is the thawing rather than freezing which does the damage.

PRESERVING CABBAGES.

To preserve Cabbages for winter and spring

use, take them up on a dry day and turn them upside down for a while to drain them well of all water. Make their winter quarters on a dry sandy spot if you have such, and warm exposure, and put them into the ground up to the leaves, after picking off all rotten and broken leaves. Make over them a low shelter of any sort that will entirely throw off the water, and keep the sun from shining on them. Leave the ends open for ventilation till cold weather, when they may be well stopped with straw.

ROOTS FOR WINTER.

Preserve Roots of all sorts for family use in the cellar, covered with dry sand or straw, or in pits out of doors as directed in "Farm Work."

CELERI.

To be able to get up your Celery at any time in winter and without having it frozen; of every three rows take up two very carefully, and cutting down with the spade on each side of the other row at six inches distance, set the removed plants carefully in these and cover up with earth to the tops of the leaves. On some clear dry day, before hard frost, cover the whole well up with straw, and put over it a good layer of earth. If thus protected you will be able to use your Celery without trouble in the severest weather.

RHUBARB AND SEA KALE.

Seeds of Rhubarb and Sea Kale may be sown this month, and will vegetate better than if kept out of ground till spring.

EARLY POTATOES.

A plot of Potatoes may be planted late this month, and well covered with straw or other litter. They will be a week or so earlier than those planted in spring. Plant in light dry soil.

TRENCHING AND MANURING.

This is a good time to give the garden soil, which requires it, a thorough trenching and manuring for the purpose of deepening the soil.

THE FRUIT GARDEN.

GOOSEBERRIES AND CURRENTS.

These may be planted out any time this month while the ground is open. Cuttings of each may also be planted.

RASPBERRIES.

Raspberries may be planted this month. The sorts of the Raspberry which are not very hardy, should be carefully laid along the rows and secured to the ground with wooden pegs, and then be covered with straight sticks and litter, or they may be entirely covered over with earth. Before this is done all the canes which have borne

fruit should be taken out, and none left but the young wood of this season's growth.

RICE TAXA.

Why does not every garden contain some trees of this delightful fruit? It is not only pleasant and wholesome when ripe, but makes a very superior green preserve. They grow and frequently bear well in this latitude entirely without protection, and with the slight protection that may be readily given them, would bear abundantly.—Plant on the south-side of a wall or close fence, on light warm soil, keep the roots covered with litter, and protect the branches with straw or matting from the direct rays of the sun.

CRANBERRIES.

Bear in mind this valuable fruit and find out a place for it. It can be cultivated to large profit and should be.

STRAWBERRY BEDS.

If not done heretofore, let these be thoroughly cleaned out and well dressed with fine manure.

THE ORCHARD.

PLANTING.

All hardy trees may be planted this month. Plant only on dry or thoroughly drained ground. Be sure it is put in a good state of preparation. Have your trees well selected and planted with the utmost care. All sorts of trees may be planted now or postponed to early spring. All sorts should be planted at one time or the other—Apples, Pears, Quinces, Plums, Cherries, Peaches, Nectarines, Apricots, Walnuts, &c.

PRUNING.

The pruning of hardy trees may be done this month if more convenient, but it is better, we think, to defer to February.

NEWLY PLANTED TREES.

Stake and tie these up carefully to prevent their being twisted and rocked about by the winds. Use bands of straw for securing them.

PEACHES IN POTS.—The Connecticut *Homestead* notes that in the garden of D. T. Coit, near Hartford, peaches are to be seen the present season. But they are grown in sixteen inch pots or boxes and are kept in orchard houses during winter. The trees by this plan are severely headed in, and kept of course within a small compass, each tree bearing about twenty-five or thirty peaches. This method of cultivation is claimed to be more certain to yield fruit, and after the house is up, is not so very expensive. We note that for peaches, plums, and some of the fine stone fruits, strong efforts are being made to introduce the orchard-house system.

FLORICULTURE—November, 1859.

Prepared for the American Farmer, by Wm. A. Brewster, Nurseryman, Greenstone.

The weather during the past month having proved very mild, causing as fine a display of *Rose*, *Dahlias* and *Verbenas* to be produced as in the month of August; for this reason, many may have delayed taking up tender plants from the borders, in order that they might enjoy the beauty of the flower parterre as late as possible, but as one night's frost may destroy every thing you wish to preserve, therefore all such plants should be lifted and placed under cover as soon as possible.

Camellias will soon begin to bloom; syringe moderately overhead, every bright morning, in order to keep up a humid atmosphere in the house, and give water rather sparingly at the roots at this season of the year.

Chrysanthemums in flower should be shaded from the mid-day sun—the colors will then be more delicate and the blooms will last longer; fumigate very lightly to keep down the aphis, and water with liquid manure.

Polargoniums standing in inch pots should be shifted into larger ones, using as a compost turfy soil incorporated with sand and well rotted manure; drain the pots well, and water very moderately.

Cinerarias should be kept in frames as long as the weather will permit; such as require it may be shifted into larger pots. These plants like a rich soil, composed of turfy loam, manure and sand. The same kind of treatment suits *Calceolarias*—while both should have a light airy situation appropriated to them in the house; see and keep down the green fly and red spider—the latter is readily killed by water and sulphur, the former by fumigations of tobacco.

Roses in pots, for early blooming, ought to be pruned, tied up to meat stakes and placed in a warm, light part of the house, where they are to flower.

Place in small pots the *Ten-week Stocks*, *Pimpernel*, and other tender annuals sown last month.

The pots containing *Mignonette* should be watered very moderately; thin out the plants where they are too thick, leaving about five plants in each pot.

Japan Lilies, where their leaves and stems are decayed, may be removed to a dry cellar or placed under the greenhouse stage until the season for potting them arrives.

Heliotropes and *Verbenas*, for winter flowering, ought to be shifted into the pots in which they are to bloom, and placed in a moderate warm part of the house.

Chinese Primroses should be kept close to the glass; keep clear of all decayed leaves and water occasionally with liquid manure.

Remove all *Salvias*, *Scarlet Geraniums*, *Browallias*, &c., into the greenhouse, that were lifted from the borders and now standing in frames, as cold, damp weather is prejudicial to them.

Heaths and *Epacries* are plants that require care to keep them in a thrifty condition; a light, airy situation suits them best. Shift into larger sized pots such as may require it, any time during the winter, observing to drain the pots well.

Tropaeolum Lobianum being a very ornamental

plant, and when started into growth now, will bloom during the whole winter; train the stems to neat trellises and place the plants in a warm and light part of the house.

Leucadendron Formosum should now be repotted; use a compost of woods earth and white, sharp sand.

The different kinds of white and blue *Maurandias*, if kept growing by shifting into larger pots and trained to neat trellises, are very beautiful objects during the winter.

Sweet-scented Violets and *Monthly Carnations* are very desirable plants for the greenhouse, and should therefore receive care and good position. Remove in-doors all half-hardy plants left out from last month's housing, and in mild weather, when air can be given to the houses, put on a moderate fire, so as to dry the flues, in order that they may be in good working order when cold weather sets in.

Dahlia Roots ought to be taken up immediately after the first frost; see that the roots are not stored away in the cellar or under the greenhouse stage, in a wet condition.

Sweet-scented Violets, in frames, should be protected with mats when severe frosts set in.

Tulip and Hyacinth Roots not planted, ought to be put in without delay.

All *Gladiolus* and *Tulip Roots* should be taken out of the ground at once.

Herbaceous Plants put in last month will require protection; a thin coating of oak leaves or rough manure answers the purpose very well. Begin to prepare ground for early planting in spring by digging, trenching or throwing up the ground in ridges, so that the frost may act upon it. Save all necessary seeds—dry, label and place them away in a cool place. Collect and tie up in bundles all stakes used during the summer, and put them away under cover. See that the flower beds are cleared of all decayed stems, leaves and weeds.

[For the American Farmer.]

Wheat.

As bread is "the staff of life," the wheat crop is a matter of universal interest. Wheat is an expensive crop. No fifty dollar land can be cultivated in wheat for less than \$10 per acre, viz.:

The interest of \$50 for one year is	\$ 3 00
Cost of breaking fallow per acre.....	1 50
Seed, two bushels at \$1.....	2 00
The fourth bushel for cutting, threshing, and putting in mill.....	2 50
Harrowing ground, sowing, &c.....	1 50
Taxes.....	20

\$10 70

It appears then that it costs fully \$10 dollars per acre to cultivate wheat on fifty dollar land. The profit of a crop of wheat is as large again on land that will make twenty bushels per acre, as on land that makes but fifteen bushels per acre.

The ratio of increase in the wheat crop is much smaller than in the population of the country, as is shown by the following table:

Popula- tion.	Bus. wheat raised.	Bus. wheat exported.	Consumed at home.
1840. 17,053,973	84,822,572	10,118,865	73,704,007
1850. 23,191,876	100,457,840	7,555,940	93,931,900
1855. 27,187,517	108,055,677	5,811,652	102,844,116

If the wheat crop from 1840 to 1850 had increased in a ratio equal to the population, the crop of 1850 would have been 122,973,208 bushels, instead of 100,457,840.

The fertilizing principles in the soil—have been exhausted by injudicious farming. In 1775 good land, about Albany, N. Y., yielded from twenty to forty bushels of wheat to the acre; in 1793 these same lands yielded from sixteen to twenty bushels; in 1815 these same lands yielded from twelve to sixteen bushels; in 1845 Albany county averaged but seven and a half bushels wheat per acre, which did not pay expenses.

The decrease in the wheat crop of Connecticut, from 1840 to 1850, was fifty per cent.; in Maine, four hundred per cent.; in Massachusetts, five hundred per cent.; in Rhode Island, one thousand per cent. The entire product of wheat in the last named State for 1850, being but forty-nine bushels. The Yankees are too sharp to cultivate crops that don't pay.

A century of injudicious cultivation has so exhausted the fertilizing properties of our soil that the wheat crop often fails to pay expenses. Well authenticated cases can be furnished of crops of one hundred and forty bushels of wheat having been raised in Erie county, Pa., on two acres of ground; and of sixty-six bushels per acre the field through in Lancaster county, some time prior to 1820. In our days farmers realize no such yield.

One cause of the decrease in the crop of wheat is the advance in the price of labour. Labour costs nearly double what it did twenty years ago.

Another cause is the exhausted condition of the soil, which is daily getting poorer and poorer.

Wheat has its enemies too. The Hessian fly, the frosts of winter, the storms and hail of summer, the rust, the scab, the smut, the midge—all conspire to render the wheat crop more uncertain and unprofitable.

Another great difficulty in the cultivation of wheat is a fixed determination on the part of newspaper editors and the dealers in and consumers of wheat, every where, to represent the crop of every season to be enormously large, the breadth of land sown great without precedent, &c., &c.

But perhaps the greatest obstacle to the cultivation of wheat is the conduct of the various Corn Exchanges of the country. We have six of these associations in the United States—one in New York, and one in each of the cities of Philadelphia, Baltimore, St. Louis, Richmond and Chicago. These gentlemen get their key-note from the Liverpool Corn Exchange, by which they may be controlled, and then for the onslaught.

The princes of our Corn Exchange this year made a desperate effort to reduce the price of wheat to \$1, and some predicted that the price would not exceed 80 cents per bushel in the month of August. In June the Corn Exchange gentlemen had all the wheat and flour in the country, and

*Agricultural address Hon. C. J. Falkner.

A newspaper stated the other day that Ohio made this year 90,000,000 bushels of wheat. A letter from a flour dealer to a miller in the interior, stated that Illinois this year made 250,000,000 bushels of wheat. We apprehend that these two amounts—340,000,000 bushels—will be more than double the amount raised in the whole United States. The most extravagant and ridiculous statements are made of this subject by persons who ought to and probably do know better.

flour sold for \$7.50 per barrel. By the 1st of August, flour from new wheat was in the market—the crop of the country was in the hands of the farmers—and the price of flour went down to \$5 per barrel. Such fluctuations in price are designed and effected by the agency of the Corn Exchange and its co-operators.

If the tables of our custom-houses can be relied on, we imported from Canada in the year 1855, 3,178,000 bushels of wheat more, than we exported to all the world.

Less than a century ago the wheat crop of England amounted to less than 16,000,000 of bushels. By the returns of 1853, her production was 90,000,000 of bushels—averaging 30 bushels upon every acre cultivated in wheat. England and Wales, territorially smaller than Virginia, raised in the year 1850, almost as much wheat as the whole United States. In that year Virginia raised 11,212,616, and yet the soil and climate of Virginia are perhaps better adapted to the culture and growth of wheat than those of England.

While the culture of wheat decreases in the United States in the ratio of population, it increases in England. There the immense amount of labour and money invested in manufactures and commercial pursuits, affords a sure market to the farmer. In England the legislation of the country is designed to encourage and protect the wheat-growing interest. Parliament appropriated £40,000,000 sterling, in 1846, to enable the farmers to drain their lands—high and low—with tiles. The result was so satisfactory that in 1856, a like amount was appropriated. Every conceivable effort is made by the government and people to increase the wheat crop. In the United States the idea of encouraging the growth of wheat by our national policy, never enters the head of our legislature. Our ambassadors, our president and cabinet introduce clauses into our treaties with other Powers, against the wheat-growing interest. In various ways therefore the growth of wheat is proscribed and discouraged. If this policy be continued by our government a few more years, our country will import bread to supply our own wants, instead of raising a surplus for our tropical neighbours and our transatlantic kinsmen.

M.

Definition of Soils.

In common phraseology, soils are characterized by various, and, in many instances, very vague terms, such as heavy, light, stiff, open, tenacious, porous, wet, dry, warm, cold, etc. These always convey certain important characteristics, but are differently understood by different persons. Soils are properly classified according to the presence, in greater or less proportions of certain bases, such as clay, lime, sand, and vegetable matter, these being important constituents.

A pure Clay is a soil in which very little sandy, silicious matter is found; accurately it consists of a chemical combination of about sixty parts of silica and forty of alumina, with a trace of oxide of iron.

A Strong Clay contains about twenty parts in one hundred of sand, capable of separation.

A Clay Loam contains a large proportion of sand easily separated.

A Loam contains one-half or more sand, readily separable.

A Sandy Loam contains eight or nine-tenths sand.

A Sandy Soil contains one-tenth or less of clay.

The above are the varieties of soil as regards the base clay.

In reference to the second important constituent, *lime*, we have a *marl*, containing from five to twenty per cent. of lime.

A Calcareous Soil in which lime is the predominant constituent. Marls are always characterized as sandy, loamy or clay marls, according to the portion of the sand.

In respect to decayed vegetable matter, there are soils which owe their character to this. Such are our swamp soils or *muck*, in which masses of ferns and the roots of dead grasses predominate, forming a black fibrous mass. *Vegetable* or *leaf-mold*, formed by the decay of leaves, found in our wood-lands, is one of the most valuable items to the gardener. *Muck*, however, can not be used with safety in compost with other soils, until it has been meliorated by exposure to the sun and air, to the admixture of some alkali it contains; potash, soda, lime or magnesia are the most efficacious alkalies used, and are found in several forms, such as wood ashes, common salt, etc. The term *peat* is frequently used in speaking of soils, resulting from decayed vegetable matter; the term *muck* has a very different significance with our English fellow laborers, though the popular phrase with us.—*Germanstown Telegraph*.

Potatoes Rotting.

In answer to a correspondent, who enquires what he shall do with his potatoes, which he says are rotting extensively, and suggests the propriety of digging them early, we say,—let them alone; they had much better rot in the field than in the cellar, besides saving the trouble of digging. If potatoes are discovered to have an inclination to rot, we know of no way to prevent such a proceeding. At the proper season for digging let them be dug, and if there be found any sound ones, place them in the cellar. Some early varieties may be dug and marketed before the rot begins. It is said, and truly, perhaps, that the *starch*, being the last part effected by the rot, may be separated from the decayed and all other portions, and be as useful and marketable as any. We suspect, however, that the colour would be injured. To separate the starch from the potato, the roots are washed, and then grated or mashed, and the fine pulp subjected to the action of gently running water, which washes away the starch, not in solution but suspended in it. It will settle when the water is allowed to stand, and may afterwards be again washed and purified. Of the potato disease, Dr. Lang, in a prize essay recently published by the British Agricultural Society, says it "is of a fungoid nature, increased in virulence by atmospheric causes." The same writer says that all manures are injurious except lime and salt; that the earliest potatoes in ripening should be exclusively raised, and that earthing up repeatedly with fine earth is the only effectual preventive to the ravages of the disease.—*Connecticut Homestead*.

Manure Theories.

Owens, N. Y., Sept. 22, 1859.

To the Editor of the American Farmer:

There is no better mode to arrive at facts in agricultural pursuits, than by practical farmers exchanging opinions. It is my belief that much judgment must be exercised before trying experiments not founded on practice. There is so much "humbug" in what is falsely called science, that the farmer is often led astray by its erroneous statements. This gives him a distaste for reading, justifies him in condemning "*book farming*," and induces him to pursue his habitual customs, whether they render a profit or loss.

I am perfectly willing to admit that there is much benefit derived from *true science*, but there are so many persons aiming at notoriety, and professorships, who base their foundations on scientific words, technical terms and grammatical language, for the purpose of displaying their learning, and at the same time their "*noddle*" does not contain a practical idea. They involve themselves in a labyrinth of learned mystery, from which they cannot extricate themselves, and in attempting to teach others their visionary pursuits, have signally failed in the result. Such is too frequently the case.

I know many scientific gentlemen, who study ancient authors, and various kind of authors, who have turned over as many leaves of paper and print, in their laboratory, as would puzzle the brains and confuse the imagination of a previously strong mind, and who have never turned a furrow or a compost heap in their lives, yet they grope on in these dark passages until they are actually swamped in their extensive learning and absolutely forget the place they started from. Farmers are beginning to understand this. They find that by reading letters from practical men, and information derived from actual, practical, and other reliable sources, endorsed by sound heads, strong hands and willing hearts, (the best parts of a farmer's capital,) that they are more capable of taking care of themselves and their soils than trusting to the dictates of theories or an artificial education.

We all know full well that barn-yard manure is a substantial fertilizer, and we also know that it is estimated by the food the animals consume, and we are also well aware that if it is left in a position to drain away its strength, that it is solely the owner's loss. But I, for one, do not know whether any of its substance ever evaporates into the atmosphere. We know, too, that excrements from the feathered tribes are valuable, and probably of more strength than the former, because the ingredients in the urine passes through the same channel, are not exposed to the washings of rains, and are generally conveyed to the land in their full power.

We also know that night soil is very powerful, and when a mixture of good roast beef, venison, some well-fed carcasses of Cotswold and Southdown sheep, Suffolk and Berkshire hogs, well seasoned with wines, liquors and beer, to stir them well together in uproarious confusion, is a valuable deposit, and I would strongly recommend city gentlemen who value their country to distribute this high farming produce back to the soil from whence they all sprung, to produce pre-

mium crops, thereby setting good examples with money, and proving themselves true benefactors. It is now impossible to "calculate" the loss that is sustained in large cities by the waste of this valuable material, constantly drawn from the soil. They must also be aware that such a course of manuring must be a substantial one, and the farmer who receives this fertilizer at a cheap rate would have an opportunity of displaying his true science in its management and economy. It must be adulterated with weaker excrements, common earth, plaster or lime, to effect its immediate action, or left to decay, and then used in small quantities, or in any other form the farmer's good judgment may dictate. *His science*, in a judicious disposal of it, would command confidence. If applied in its crude state extravagantly, it would destroy vegetation. Every practical farmer is aware of all this, and applies his manure according to its substance.

But the farmer is highly indebted to chemistry for discovering the means of conveying this highly valuable article from its place of deposit to that where it is more profitably invested, void of that offensive smell. Here I must ask one question on this point, which I have never yet seen satisfactorily answered: Is this odour (commonly called "ammonia") to be classed with fertilizers? I have an impression, from my own observation only, that it is not, and that manure is of no use to plants until it escapes from it, nor is it converted into food for them until it is thoroughly dissolved; it must be in solution before it can be absorbed by the roots, the only means of support to plants, in my opinion, and when it is in this state there is no smell to it. For instance, apply fresh urine bountifully to a plant; it sickens and dies because it has fed upon unwholesome food, but place that urine a short distance from it, where it can be absorbed by the inorganized earth, it will release the food in that earth, and all will be held in solution, and the unwholesomeness called ammonia escapes; the roots and fibres of the plant will gradually draw towards the spot in search of its food, if the immediate soil is nearly exhausted, and when they arrive there, grow luxuriantly while fully supplied with it in its wholesome state. The roots on that side of the plant will be strong and vigorous, while on the other it will be weak and dwindling. This is from my own practical observation.

Here is another point on which I should like to gain some information: Does this odour, when absorbed by charcoal, gypsum, or any mineral called absorbents, tend to add strength to them, as fertilizers, or is it taken up by them for the purpose of decaying them prematurely, they not possessing this agent? This seems to me like a reasonable question. I should like to hear from some scientific gentlemen on this important point. My impression is, that when green manure is ploughed into the earth and there decays, this odour called ammonia escaping when its work is done, but instead of going into the atmosphere—which it would do were the manure on the surface—it enters into the inorganized matter and releases that for the rain to dissolve. There is a portion of mineral substances required for plants, and that portion varies in their kinds, and when this decaying agent is absent and there is a

scarcity of these ingredients in the soil, and those waiting for the elements and time to decompose, the plant is deficient in them; but if there is an abundance of this starch, which is the case when the soil is full of decaying vegetable matter and not sufficient absorbents to exhaust it, it evaporates and contaminates the atmosphere, and is destructive to the human race if kept constantly in contact with it.

Probably, Mr. Editor, I shall be called an ignoramus by some of your learned gents, for thus advancing my opinion, as it is all from my own imagination and observation, none of it gleaned from books or false science. If I am in error, it will be corrected by their proof to the contrary. I wrote a similar article to this for the *Mark Lane Express*, in England, some twelve years ago, when the doctrine of Messrs. Liebig, Nesbit and Fay was very different to what it is now. They then thought my article was "ridiculous." I now see that these gentlemen, by their arguments with each other, are coming round to this doctrine, and that the best farmers are applying their manure to the surface, well assured it is the best in most cases; it takes longer to decay when put on the surface in its long green state, but there is no loss from evaporation. I contend there is more substance from manure lost from the draining of barn-yards than any other way.

WM. H. SOTHAM.

COSTLY CRANBERRY MEADOW.—Captain Capon has expended one thousand dollars upon a single acre to bring it into cranberry meadow, and with the strong expectation that it will be a good investment. This is the most costly acre of cranberry land that we have ever heard of. If it will pay thus to fill in deep swamps, and then give them a coat of three or four inches of mud, with a top-dressing of sand, it is quite evident that those who have little else to do to their meadows but break them up with a plough, and set out the vines, ought at once to be about it. A situation where the meadow can be flooded until June or July is thought to be best, but there are different opinions, we find, in regard to the whole theory of cranberry culture.—*Barnstable Patriot*.

COOKING FOOD FOR SWINE.—A Kentucky farmer has been making experiments in feeding several lots of hogs, changing them from raw to cooked, and ground to unground food. The results of these several trials are communicated to the *N. Y. Tribune*, from which we give the general estimate.

One bushel of dry corn made five pounds and ten ounces of live pork. One bushel of boiled corn made fourteen pounds and seven ounces of pork. One bushel of ground corn, boiled, made, in one instance, sixteen pounds seven ounces, in another nearly eighteen pounds of pork. Estimating corn at ninety cents a bushel, and pork at eight cents a pound, we have as the result of one bushel of dry corn, 45 cents worth of pork; of one bushel of boiled corn, \$1.15 worth of pork, and of one bushel of ground corn boiled, \$1.36 worth of pork.

How to make a clean sweep. Wash him.

List of Apples for Latitude of Maryland.

To the Editor of the American Farmer:

DEAR SIR: As proposed I send you a list of some of the varieties of apples which I find from my own observations are suited for the latitude of Maryland. But in the first place I must take exception to a remark you make in your comments upon my article in the March number of the *Farmer*. You say: "It is necessary to be very careful in condemning any variety of fruit of well established reputation, because it does not happen to succeed well in the particular locality where those who condemn it reside." In principle I agree with you, for no writer should be guilty of making assertions which he cannot substantiate; yet how much disappointment and prejudice is occasioned by persons jumping at conclusions, and then heralding those conclusions to the world as practical facts. Now the inference to be drawn from your remark is that I am one of the latter class. Having made fruit culture a study from my childhood, raised in one of the largest fruit-growing sections of the State, (Washington county,) travelled frequently through the valley of Virginia, from the Potomac to the Roanoke rivers, with a residence of six years in this part of the State, besides having handled several thousand barrels of apples purchased in the western part of the State and adjoining counties in Virginia, I cannot think my conclusions have been hasty or without a proper knowledge of the subject upon which I write.

I have noticed there is a difference of about one degree in the climate between this place and Washington county, Md., (the difference being so slight as not to affect the ripening of apples,) and the climate of Augusta county, Va., is about the same as the last named place, elevation being about equal to difference of latitude, so that an apple which does well in the neighborhood of Baltimore or Washington cities, can as a general thing be relied upon in Western Maryland, or in Virginia as far South as the James river.

RAMBO—This old and popular apple appears to be little known in this part of the State, but extensively grown in the western counties, and is more sought after in the Baltimore and Washington markets, in its season, than any other variety. Medium size, dull red striped upon a yellowish ground, flesh juicy, rich sub-acid, ripens from November to January, and with care will keep till March; tree a good grower and bearer, and requires a rich, rather moist soil; upon thin or light soils it will not succeed.

WINE APPLE.—A New Jersey variety, which does remarkably well in this State, of large size, striped with glossy red upon a yellow ground, with a rich, rather acid flavour, season November to February; tree a thrifty grower, bears young and constant. Its fine size and handsome appearance makes it valuable as a market apple.

WINSAP.—Medium size, of a deep red colour, flesh yellowish, crisp and juicy, with a rich sub-acid flavour; season January to June; tree a good grower and profuse bearer.

SMOKEHOUSE.—From Pennsylvania, a No. 1 variety, of large size, colour yellow, indistinctly striped with red, flesh crisp and juicy, with a rich spicy sub-acid flavour, tree a strong but rather

weakish grower, bears young; season October to February. This apple is classed (incorrectly I think) among autumn apples in most works on fruit.

PALLOWATER.—Another Pennsylvania variety, of large size, colour greenish yellow, with a brown cheek, flesh tender, juicy, with a rich mild sub-acid flavour, tree a strong grower and good bearer. A valuable apple.

OSBURN.—Above medium size, conical in form, colour pale yellow, tinged with red on the sunny side, with a rich sprightly sub-acid flavour, season December to April, tree a slender grower, but bears young and constant.

NEWTON PIPPIN.—Although of the highest excellence in point of flavour, cannot be recommended for general cultivation. It is a poor grower, and, except in a few favourable localities, a poor bearer, and the fruit is almost invariably imperfect. Out of one thousand barrels purchased in the western part of the State three years ago, I am confident I could not have got twenty-five barrels which would have passed inspection in New York as shipping apples; yet I would advise every one to plant a few trees of it, as it is not surpassed in point of flavour—season January to April.

PRYOR'S RED.—Known in Frederick county, Md., as the James River. It originated in Botetourt county, Va., where it is known as the Big Hill Apple. The original tree grew upon a high hill overlooking the James River, on a farm owned by a Mr. Pryor, who afterwards removed to Kentucky and took his favorite apple with him—hence it is known throughout the west as the Pryor's Red. It is one of the most valuable varieties for this climate, medium to large size, colour dull red, streaked upon a greenish ground, somewhat russeted, with a fullness at the stem, peculiar to it alone, flesh tender, with a rich sub-acid flavour, season December to April, tree a good grower and bearer.

WINTER SWEET PARADISE.—Of first quality as a sweet apple, of large size, colour yellow, with a brown cheek, season November to April, tree a strong erect grower and good bearer. From Pennsylvania.

MILAM.—A native of Virginia, and extensively grown in the counties east of the Blue Ridge, on account of its fine bearing qualities, size medium, colour red striped or nearly covered with red on a yellow ground, with a pleasant sub-acid but not very high flavour, season October to March, tree a tolerable grower and certain bearer.

RAWLE'S JANET.—Another Virginia apple, of first quality, rather below medium size, colour greenish yellow, striped with red, flesh crisp and juicy, with a rich sub-acid flavour, season February to May, tree a slow grower but prolific bearer, blooms a week to ten days later than other varieties.

GOLDEN BALL.—A native of Washington county, Md., size large, colour yellow, with a rich, rather acid flavour, a fine showy apple, season January to April, tree a strong grower and good bearer.

CARTHOUSE.—A small red apple, of good quality, season January to June, tree rather a slender grower, but hardy and a prolific bearer.

NORTHERN SPY.—One of the few northern apples which does well in this latitude, size large,

colour dark red striped, with a rich sprightly sub-acid flavour, season January to May, a strong erect grower and good bearer.

SWEET WINTER NONSUCH.—Size medium to large, colour red striped on a yellow ground, sweet rich crisp and juicy, season November to March, tree a good grower and regular bearer. One of the very best sweet apples.

SMITH'S CIDER.—From Pennsylvania I believe; one of the most valuable varieties for market, above medium size, nearly covered with red on a yellow ground, pleasant sub-acid but not high flavour, season November to March, tree a good grower and prolific bearer.

I noticed an article in the April number of the Farmer headed "Apples rotting before Ripe." I suspect the disease spoken of is what is generally called the "Bitter Rot," a disease which when it gets into an orchard is very apt to go through it. The rot is so bitter that the fruit is worthless even for vinegar, consequently the apples are left lay under the trees, thereby increasing the disease. The only way to eradicate the disease is to destroy the fruit as fast as it falls. I once knew an orchard which had become utterly worthless from the effects of the rot, so that the owner of it threw it open for the benefit of his hogs. In a couple years afterwards he was surprised to find his apples were not affected, and ever since the orchard has been bearing good crops of perfect fruit. Yours respectfully,

D. M. REICHARD.

Cedar Glen, near Washington, D. C.,

October 10th, 1859.

Justifiable "Lying."

We have the following from S. G. M., of Kendall county:

"Good evening, Mr. M., what have you been doing to-day?"

"Lying, sir."

"What have you been lying about? I thought you detested liars."

"Trees, sir, the only thing a man is justifiable in lying about, provided his lye is strong enough."

"How strong do you use your lye?"

"As strong as good wood ashes will make it."

"How do you apply it?"

"With a broom pretty well worn; what is better is a splint broom; scrub the trunk and branches as far as they can be reached."

"When is the best time to apply it?"

"From the 15th of March to the 15th of June, or even later, but I prefer doing it before the foliage makes its appearance."

"Will it injure the foliage?"

"It will if the lye is strong enough."

"Will not very strong lye injure the bark?"

"I think not. I once boiled down some lye strong enough to strip a quill (the rule for making Hoosier soap) and applied it to my trees with good effect. In using lye, caution should be taken not to trim until after washing. If you have occasion to remove any of the branches, cut them half an inch long, then trim close after washing."—*Pr. Farmer.*

In opium eating, the United States is said to beat China.

Early and Late Varieties of Wheat.

L. TUCKER & SON—This morning I received a letter from ANTHONY KILLGORE, Esq., of Fernleaf, Ky. The importance of its contents, I trust, will apologize for my furnishing you a copy for publication in the *Country Gentleman*:

FERNLEAF, KY., Sept. 9, 1859.

MR. LEVI BARTLETT.—Your second article upon the subject of the cultivation of "Winter Wheat," in the *Country Gentleman* of September 1st, has met my eye, and attracted my particular attention. Your remarks are timely and to the point. See advertisement of Cobb & Co. in the *Country Gentleman*, who are selling "May Wheat, Hill, Mediterranean, and White Kentucky." Now those gentlemen are deceiving themselves and their customers, as some of these are *late ripening varieties in all latitudes*. The Kentucky White did not originate in this State, nor in the Southern States; it came here within the last fifteen years from the Northern States; was a late ripener when introduced, and but little earlier now. It is really the wheat known as Blue-Stem White all over the North. Mr. C. J. Blood, Lyndonville, Orleans county, N. Y., wrote me that he purchased "May Wheat" last year, of this house in Buffalo, and that it proved a late ripening sort, and he thought it was the "Blue-Stem White." I sent him a sample by mail of the true "Early May," and the imposition is detected. Well may you warn the northern wheat-growers against these tricks, and against the indiscriminate use of the seed, merely because it has been grown *South*. Ninety-nine hundredths of all the wheat grown in the *South*, has been introduced from the *North*, and that within a very few years, from the fact that the universally received opinion has been, that to perpetuate in health and vigor this plant, we must go *North* for seed; and when I first made a contrary announcement, it met with no response, except with yourself. It was no mere theory with me, and I claim to have discovered this fact in "winter wheat culture;" and its judicious application, on the principles laid down by you in your late article, will add millions to our wheat producers. But for the lateness of the season, I would forward to you three bushels of "Early May" for trial in New Hampshire. I, however, send you by mail about one ounce as a test. I have sent to your brother, in Lake county, Ill., one bag to try there, and have sold it in all parts of Illinois, Ohio, Pennsylvania, and New Jersey, over 1000 bushels of this hardy early ripening variety.

From your description of the Japan wheat, I think it much like the Early May. After a comparison, please state the difference. You will be able to see the difference next harvest. I think there is little, if any.

This subject I hope will continue to command your observation and attention.

With my limited knowledge of the classification of the various varieties of wheats, I think that all our late ripening ones are of English, Scotch, Irish, French, German, and Russian origin, and that all our early wheats are from the south of Europe, mostly from the Mediterranean—many from the Italian States. What is the extent of your knowledge on this point, and what

are your facilities to acquire further knowledge upon the subject? Yours, &c.,

ANTHONY KILLGORE.

REMARKS.—Whether the wheat-grower should go north or south of his location to procure seed, with the expectation of getting a variety that would blossom before the appearance of the midge, should depend very much upon the earliness, hardiness, and quality of the variety. The earliness or lateness of a variety of wheat depends upon an inherent or constitutional principle of the particular variety. Extra earliness is an inherent trait in the Early May Wheat, whether grown North or South. The principle is the same as that of early varieties of apples, peaches, potatoes, &c. These differences are the results of circumstances which none of us fully understand. We know the fact, but not the *why* of its being a fact. Who can tell us why the Early May should ripen in Kentucky by the 10th of June, and all other kinds not till into July? However, we need not trouble our heads about the matter. It is the practical results of the thing that most deeply interests us. There are early, medium, and late maturing varieties of wheat, and it is now generally known that the early ripening sorts are much less liable to injury from the midge, rust, &c., than the later maturing varieties. Therefore it is for the interest of the wheat-grower in the midge infested districts of the country, to obtain the earliest kinds, and perhaps there is none better than the "true Early May Wheat."

It is well known that ten days difference in the heading of a field of wheat sometimes makes a very material difference in its produce—the difference being caused wholly by the ravages of the midge. Mr. KILLGORE said in his letter published in the *Country Gentleman*, August 11th, "that the cutting of the Early May began on the 13th of June, and some of it was ground on the 20th of June, and some of the farmers who cultivated common varieties feed their men on bread made from this wheat, while engaged in cutting their later ripening sorts." These common sorts, inferior from Mr. KILLGORE's letter to me, were "Hill wheat," "Mediterranean wheat," "White Kentucky wheat." The two last named have been long cultivated in Ohio and New York—the latter generally known as the "Blue-Stem White."

The impression on the minds of *many*, just now, seems to be that if these wheats were originally carried from New York and Ohio, south, and cultivated there for a few years, and then returned north, they will be earlier than the same kinds that have all the while been grown at the north. Cobb & Co., Buffalo, "have no doubt that the use of Kentucky or other southern seed will hasten the crop one week at least." It may be so; but Mr. KLIPPART, Cor. Secretary of Ohio Board of Agriculture, seems to entertain different views. At pages 749-50, Report of 1857, he gives a lengthy account of the "Blue Stem White." In speaking of the different sources from which this variety was introduced into Ohio, he says "where the seed was of northern origin, it ripens at the same time the Mediterranean does in the respective counties, improves in quality, and is but little subject to injuries by insects or rust; the second named, or of Pennsylvania acclimation, invariably ripens fully a week later

than the Mediterranean, and improves by cultivation. That regarded as of southern acclimatization, ripened about ten days later, was very sensitive to cold, much subject to disease, and deteriorated so rapidly that in seven counties he names, and many others, it was entirely abandoned. If Mr. K. is right, there can be no benefit derived by northern farmers sending south for common varieties of wheat. However, as these different views cannot be reconciled or settled by "pen and ink," I stop here, leaving the matter with the farmers and others to draw their own conclusion.

LEVI BARTLETT.

Warren, N. H., Sept. 19.

How to Fatten Chickens.

It is hopeless to attempt to fatten chickens while they are at liberty. They must be put in a proper coop; and this, like most other poultry appurtenances, need not be expensive. To fatten twelve fowls, a coop must be three feet long, eighteen inches high, and eighteen inches deep, made entirely of bars. No part of it solid—neither top, side nor bottom. Discretion must be used according to the sizes of the chickens put up. They do not want room; indeed, the closer they are the better, provided they can all stand up at the same time. Care must be taken to put up such as have been accustomed to be together, or they will fight. If one is quarrelsome, it is better to remove it at once; as, like other bad examples, it soon finds imitators. A diseased chicken should not be put up.

The food should be ground oats, and may either be put in a trough or on a flat board running along the front of the coop. It may be mixed with water or milk; the latter is better. It should be well slaked, forming a pulp as loose as can be, provided it does not run off the board. They must be well fed three or four times a day—the first time as soon after daybreak as possible or convenient, and then at intervals of four hours. Each meal should be as much and no more than they can eat up clean. When they have done feeding, the board should be wiped, and some gravel may be spread. It causes them to feed and thrive.

After a fortnight of this treatment you will have good fat fowls. If, however, there are but four to six to be fattened, they must not have so much room as though they were twelve. Nothing is easier than to allot them the proper space; it is only necessary to have two or three pieces of wood to pass between the bars, and form a partition. This may also serve when fowls are put up at different degrees of fatness. This requires attention, or fowls will not keep fat and healthy. As soon as the fowl is sufficiently fattened it must be killed, otherwise it will still get fat, but it will lose flesh. If fowls are intended for the market, of course they are or may be all fattened at once; but if for home consumption, it is better to put them up at such intervals as will suit the time when they are required for the table. When the time arrives for killing, whether they are meant for market or otherwise, they should be fasted, without food or water, for twelve or fifteen hours. This enables them to be kept some time after being killed, even in hot weather.—*London Cottage Gardener.*

The Frosts, Crops, and Markets.

This peculiarly frosty season has kept up its character to the last; and in its early September freaks pretty much used up the corn crop of the northwestern country, except the earlier kinds, a portion of which had probably got out of the way; still we are led to believe that there is hardly enough of any and all kinds matured in the State, to answer for seed next spring. The corn crop, as a whole, is undoubtedly more fully destroyed by the early and late frosts, and the vermin, than ever before in the State, and this too, unluckily, upon the top of the poorest hay crop ever known; and with no potatoes or root crops to speak of.

The BUCKWHEAT is also a complete failure, probably not one good crop hardly in the State. And winter commencing practically so far as foddering is concerned even now, at that. Just how the tolerably abundant stock of the country is going to be gotten through a seven months winter, is more than we even pretend to know. We think that there are difficulties of this kind ahead, of a much more alarming nature than are usually anticipated. In fact, we think that every farmer ought, in the very outset, to practice the most careful economy in every forage article that he has about him, not omitting the straw even; no matter if a man has more than he expects to need himself—in that case he should still carefully save it for his neighbors, some of whom will certainly need it before grass comes again.

What effect all these matters will have upon the wheat and oat crop, cannot be definitely known; but we think it reasonable to conclude that the latter crop at least will be considerably enhanced in value, from the failure of corn and the scarciness of roots. We are inclined to believe that oats will bear a good if not a high price, as soon as the country is fairly conscious of its condition; and that wheat will bring fair prices some time during the year, we feel equally sure—but by this, we do not mean high prices. The crop of the country, on a fair summing up, is not going to be as large as has been imagined—probably considerable less—still we doubt not there is plenty and more than the country will need, but not a sufficient overplus to finally materially depress prices. In this connection we will repeat what we have said before and still believe, and that is, that we consider six shillings as good a price, ordinarily, for wheat in the fall as one dollar in the ensuing spring and summer—all things considered it will usually count as far in paying debts.—*Wisconsin Farmer.*

CORN-MEAL VS. WHOLE CORN FOR SWINE.—Experiments prove the vast superiority of ground over unground food. A bushel of dry corn made five pounds ten ounces of pork; a bushel of ground corn, boiled in one case, made sixteen pounds seven ounces, and in another nearly eighteen pounds of pork. Boiled food, as well as ground food, for swine, has long been appreciated among the farmers in our own State, as observation has demonstrated to our satisfaction.—*Ex.*

Grasshoppers are degenerating in Virginia.—They have begun to chaw the tobacco.

Baron Von Liebig.

LETTER II.

Before proceeding to prove that our present system of agriculture is one of spoliation, I must from the outset remark, that I do not by this mean, that each agriculturist acts contrary to the rules of logic and common sense in tilling his ground in the manner most advantageous to himself. On the contrary, I feel satisfied that, so far as the attainment of this point is concerned, our practical agriculturist is very reasonable and logical. He knows, in general, the means of rendering barren grounds fertile, and of obtaining the best crops from fertile fields; and he employs these means with reflection and skill, for they have been known and proved for ages.

A field from which a large crop of corn has been reaped, is again enabled to produce the same crop by *mechanical preparation* and by *manure*. Any peasant, who cannot read or write, knows that such a result will follow the employment of these two means.

It is asserted, that the present system of husbandry yields greater crops, and produces more corn and meat, with more profit, on the same area than formerly. I will not, at present, contest this point, and therefore it is not now my object to attack this *system*, but rather to discuss the question, whether or not it is a *rational one*. If the large crops are a consequence of a mode of management by which the ground must gradually lose the conditions of its fertility, by which it must be impoverished and exhausted, then such a system is *not rational*, though it enrich the individual who obtains these high returns.

I am aware that the majority of agriculturists are fully satisfied that their mode of husbandry will insure a continuance of fertility to their fields. If I can succeed in awaking a doubt in this belief, I shall have gained an important point. The simple perception of their error will suffice to lead to its correction.

I hold it, indeed, to be no longer possible to bestow again upon the soil all those conditions of fertility which have been withdrawn by the existing mode of husbandry; but, by a judicious system of management, so much may be accomplished with the still existing means, as to put in the shade all that has hitherto been done.

To comprehend clearly the existing system of agriculture, we must recall to mind the most general conditions of the life of plants.

Plants contain combustible and incombustible constituents. The latter, which compose the ash left by all parts of plants, on combustion, consist in the case of our cultivated plants, essentially of *phosphoric acid*, *potash*, *silicic acid* and *sulphuric acids*, *lime*, *magnesia*, *iron*, *chloride of sodium*.

It is now regarded as an undisputed fact, that the constituents of the ash are elements of food, and hence are indispensable to the structure of the different parts of the plant. Its combustible portion is derived from *carbonic acid*, *water* and *ammonia*, which as elements of food, are equally indispensable.

By the vital process plants are formed from these materials, when the atmosphere and soil supply them at the same time in suitable quantity, and in the proper proportions. The atmos-

pheric elements do not nourish without the simultaneous action of the elements of the soil, and the latter are equally valueless without the former. The presence of both is always required for the growth of the plant.

It hence follows, as a matter of course, that no single element of the food of plants, named above, possesses superiority over another; they are all of *equal value* to the life of the plant. But to the agriculturist, who must provide a suitable supply of all these substances in his land to accomplish his particular object, they are, on the other hand, of *unequal value*. For should there be a deficiency of one of them, he can calculate on his crop only by supplying that particular one to the soil. The deficient or absent element then acquires a *superior value*, that is, in relation to the other matters, (for example, lime in a lime soil) which the soil contains in greater quantity.

All elements of food of plants belong to the mineral kingdom. The *gaseous* elements are taken up by the leaves; the *fixed*, by the roots. The first are frequently constituents of the soil, and, as such, reach the interior of plants by the roots as well as by the leaves. From their nature, these gaseous elements are *movable*; the incombustible ingredients are *immovable*, and cannot of themselves leave the spot in which they are found.

An element of food is ineffective if there be absent a single one of the other elements of food which are conditions of its activity.

Corn plants, and those used for fodder, require for their development the same constituents, but in very unequal proportions. The successful growth of a green crop on a field, proves that it has found in the air and in the soil the atmospheric and mineral constituents of its food in the proportions suitable for its nourishment. The failure of a corn crop on the same field, indicates that in the soil there is something wanting which is necessary for its growth. Hence we must in every case of the failure of a cultivated crop, look to the ground for the cause, and not to any want of atmospheric food; for the same source of atmospheric food was available to the corn plant as to the green crop.

But how does the soil act, and in what manner do its constituents take part in vegetation? This question we shall now consider a little more in detail.

The process of nutrition consists in the appropriation of food. A plant grows by increasing in bulk; and its bulk increases by the constituents of its food becoming constituents of its frame. From carbonic acid, for example, sugar is formed; silicic acid becomes a component part of the stem; potash of the sap; phosphoric acid, potash, lime, magnesia of the seed.

In considering the effect of an element of food, we have to distinguish between the *rapidity* and the duration of its action.

In general the result depends on the sum of the active elements available in the soil, in relation to the amount which the plant may altogether absorb, and does absorb, during the period of vegetation. A deficiency diminishes the crop, but an excess does not increase it beyond a certain limit. The excess comes into play in the succeeding period of vegetation. The continuous cultivation of crops is regulated by this ex-

com which remains in the ground after each period of vegetation. If this residue is ten times greater than is necessary for a full crop, then it will suffice for ten full crops during a period of ten years.

The *rapidity* with which a substance, such as a piece of sugar, is dissolved by a fluid, is in proportion to its state of *division*. By pulverization its surface is increased, and consequently the number of points augmented, which, in a *given time*, are brought in contact with the dissolving fluid. In all chemical processes of this kind, the action proceeds from the surface. An element of food in a soil acts by its surface, the portion beneath the surface is inactive, because it cannot be dissolved. Its effect, within a given time, increases with the quantity taken up by the plant during that time. Fifty pounds of bones may in one year produce, according to their state of division, the same effect as one, two, or three hundred pounds coarsely ground. In the latter state it is by no means inefficient; but to act, that is, to become soluble, it requires a longer time. The effect produced by it is smaller, but it continues longer.

To understand correctly the effect of the soil and its constituents on vegetation, we must keep steadily in view the fact, that the elements of food present in it always possess within themselves active powers, but they are not always in a condition to exert this power. They are ready to enter into circulation, like a maiden to dance, but a partner is necessary.

The agriculturist requires eight substances in his soil, if all his plants are to flourish luxuriantly, or his fields to produce the largest crops. Many of these, though not all, are always present in quantity; three require to be added to most fields. These eight substances are like eight links of a chain round a wheel. If one is weak, the chain is soon broken, and the missing link is always the most important, without which the machine cannot be put in motion by the wheel.—The strength of the chain depends on the weakest of the links.

We have hitherto believed that plants received their food from a solution, and that the rapidity of its effect was in direct proportion to its solubility. We have supposed the active elements to be carried in solution in rain water and carbonic acid to their roots, and have regarded them in the light of sponges, half in the moist ground and half in the air, continuously absorbing by their roots the water which evaporated from their leaves. Whatever was in solution passed with the water into the roots, and by the process of nutrition was appropriated by the plant. The soil and the plant were both passive in the operation.

Vegetable physiology has taught, that an element of food in the soil, at a distance from the rootlets of plants, is available as nourishment, provided there is water between the rootlets and the food to dissolve the latter. In consequence of the evaporation from the leaves, the rootlets suck up the water, which thus, with the substances dissolved in it, receives a movement onwards towards them. We believed that the water was the carrier of the most remote elements of the soil to the immediate presence of the plant.

If 4000 lbs. of grain and 10,000 lbs. of straw

require 100 lbs. of potash and 50 lbs. of phosphoric acid for their development, and if a hectare of ground contain these quantities in a soluble available form, then there will be sufficient for this crop. If the same field contain double, or a hundred times as much, then we should expect two or a hundred crops. This has been the physiological doctrine.

But all this has been a great mistake. We have inferred from the effect of water and carbonic acid on rocks, a similarity of action on soils; but this conclusion is false.

There is not to be found in chemistry a more wonderful phenomenon, one which more confounds all human wisdom, than is presented by the soil of a garden or field.

By the simplest experiment, any one may satisfy himself, that rain water filtered through field or garden soil does not dissolve out a trace of *potash*, *silicic acid*, *ammonia*, or *phosphoric acid*. The soil does not give up to the water one particle of the food of plants which it contains. The most continuous rain cannot remove from the field, except mechanically, any of the essential constituents of its fertility.

The soil not only retains firmly all the food of plants which is actually in it, but its power to preserve all that may be useful to them, extends much further. If rain or other water, holding in solution *ammonia*, *potash*, *phosphoric* and *silicic acids*, be brought in contact with the soil, these substances disappear almost immediately from the solution; the soil withdraws them from the water. Only such substances are completely withdrawn by the soil as are *indispensable* articles of food for plants; all others remain wholly or in part in solution.

If a funnel be filled with soil, and a dilute solution of silicate of potash be poured upon it, there will not be found in the filtered water a trace of *potash*, and only under certain circumstances *silicic acid*.

If freshly precipitated *phosphate of lime*, or *phosphate of magnesia*, be dissolved in water saturated with *carbonic acid*, and filtered in like manner through soil, there will not be found a trace of *phosphoric acid* in the filtered water. A solution of *phosphate of lime* in dilute *sulphuric acid*, or of *phosphate of magnesia* and *ammonia*, in *carbonic acid* water, comport itself in the same manner. The *phosphoric acid* of the *phosphate of lime*, and the *phosphoric acid* and *ammonia* of the *magnesia* salt remain in the soil.

Charcoal re-acts in a similar manner with many soluble salts: it removes coloring matter and salts from solutions. It is natural to look upon the effect in both cases as proceeding from the same cause. In the case of charcoal, it is a chemical attraction, which proceeds from its surface; but the constituents of the soil take part in its action, and hence it must in many cases be quite different from that of charcoal.

Potash and soda are well known to stand to each other in the closest chemical relation, and even their salts have many properties in common. Chloride of potassium, for example, has the same crystalline form as chloride of sodium; and in taste and solubility they differ but slightly. An unpracticed eye can scarcely distinguish them, but the soil can do this in the most perfect manner.

If we add any soil in powder to a dilute solution of chloride of potassium, in a short time there will not be found any potassium in solution. The same quantity of earth does not withdraw from a solution of chloride of sodium, containing an equal amount of chlorine, even the half of the sodium. Consequently, a complete decomposition takes place with the potassium, but only in part with the sodium. Potash is found in all our land plants, but soda forms only an exceptional constituent of their ashes. From sulphate and nitrate of soda, the soil withdraws only a part of the soda, but the whole of the potash from the corresponding potash salts. Experiments, expressly made for this purpose, have shown that 1 litre = 1000 cubic centimetres (= 61 cubic inches Eng.) of garden soil, rich in lime, will take up the potash from 2015 cub. cent. (= 123.6 cub. inches, or 3½ pints) of a solution of silicate of potash, which contains in every 1000 cub. cent. 2.78 grammes (= 43 grs.) of silicic acid, and 1.166 grammes (= 18 grs.) of potash. From these data we can calculate that a field of a hectare (= 2½ acres) in extent, and having a depth of $\frac{1}{4}$ of a metre (= 10 inches nearly) of soil, of the same kind as that used in the experiments, would withdraw from a similar solution more than 10,000 lbs. of potash, and retain them for the use of plants. A similar experiment, made with a solution of phosphate of magnesia and ammonia in carbonic acid water, showed that a 2½ acre field would withdraw 5000 lbs. of this salt from such a solution. A loam (poor in lime) produces the same effect.

These facts give us some conception of the powerful action of soils, and of the strength of their attraction for three of the chief elements of the food of our cultivated plants, which, in consequence of their solubility in pure and carbonic acid water, could not be retained in the soil, did the latter not possess this power of attraction.*

From stale urine, liquid manure diluted with much water, or from a solution of guano, soil, when used in sufficient quantity, removes the whole of the ammonia, potash, and phosphoric acid which they contain. Not a trace of these substances can be found in the water which flows from the soil. (Thomson, Huxtable, Way.)†

* These experiments are so simple and so easily performed, that they may be exhibited at lectures. In filtering care must be taken that the fluid does not form canals, which would prevent the complete contact of the solutions with the soil. Very dilute solutions of silicate of potash, chloride of potassium, &c., must therefore be used, in the proportion, for example, of one part of substance to 500 of water. Saturated solutions of the other substances, such as phosphate of lime in carbonic acid, may be employed. Generally in the first portions of filtrate from the phosphate of lime, not a trace of phosphoric acid can be detected by molybdate of ammonia. A solution of silicate of potash, which reacts distinctly alkaline with tumeric paper, instantly loses this reaction by simple mixture with soil. This power of absorption in soils for ammonia was observed by Thomson, and for phosphoric acid and some potash salts by Way, so long ago as 1850; but up to that time neither vegetable physiologists, nor scientific agriculturists, had taken notice of the remarkable discoveries of these English chemists, so pregnant with important results to physiology and agriculture.

† I cannot here omit a circumstance communicated to me a few years ago by Dr. Marquart, of Bonn, and which illustrates, in a remarkable enough manner, the power of absorption of clay for ammonia.

A manufacturer on the Rhine conceived the idea of extracting, by means of ammonia, the oxyd of copper, which was found as malachite and azurespar dispersed

The power possessed by soils to withdraw ammonia, potash, phosphoric and silicic acid, from solution, is limited. Each soil is endowed with its own peculiar capacity in this respect. When brought in contact with these different solutions, the soil becomes saturated with the dissolved matter, and the excess of soluble substance then remains in solution, and can be detected by the ordinary re-agents. A sandy soil absorbs less than the same volume of a marly soil; and the latter less than a clay soil. The variations in the quantity of matter absorbed are as great as the differences existing among the soils. We know that no two are alike: and it is not improbable that certain peculiarities in cultivation stand in a certain relation to the unequal power of the different soils for absorbing one of the above substances. It is not impossible, that, by a closer study of this relation, we may arrive at quite new and unexpected means of judging of the agricultural value or fertility of our fields.

The action of a soil, rich in inorganic matter, on the solutions above mentioned, is worthy of remark. A clay or lime soil, poor in organic matter, withdraws all the potash and silicic acid from a solution of silicate of potash; whereas one rich in so-called humus extracts the potash, but leaves the silicic acid in solution. This compartment involuntarily recalls the action of decaying vegetable remains in the soil on the growth of plants, which, like reeds and horse-tails, require a large quantity of silicic acid. These plants abound in so-called sour moor and meadow lands; but disappear from them on the application of lime, and give place to others better fitted for fodder.

Experiment shows, that the same garden and forest soil, rich in humus, which withdraws no silicic acid from a solution of silicate of potash, immediately acquires the power to do so, if it be mixed with a little slackened lime before the silicate is added to it. Both constituents, potash and silicic acid, are then retained by the soil.

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The Kansas corn crop is so good that the article is worth only 15 cents a bushel at Leavenworth. The wheat crop is excellent.

through shale. The experiment had succeeded with him on a small scale. At a considerable expense, he constructed a large extraction apparatus, consisting of two boilers connected by a very wide tube. The fluid ammonia was placed in one boiler; the tube was filled with the shale; and the second boiler served as condenser. By this arrangement it was intended that the ammonia and vapor of water should be condensed in the tube, and, after dissolving the oxyd of copper, pass over into the second boiler. The tube was then to be filled with fresh shale, the ammonia to be driven by heat from the solution in the second boiler, and made again to extract the copper from the fresh shale. As the whole apparatus was hermetically closed, it was hoped that the same quantity of ammonia would serve without loss to extract large quantities of shale. The boilers were employed alternately as condensers. The first trial was so far successful, that a solution of oxyd of copper really collected in one of the boilers. But on passing the ammonia through a second portion of shale, it disappeared in a manner most incomprehensible to the manufacturer. The process had in consequence to be abandoned. The disappearance of the ammonia in this operation was undoubtedly due to the absorbent power of the clay of the shale. This fact may be taken as a proof of the powerful attraction existing between these two substances, which apparently could not be overcome even by the influence of a high temperature.

Something to be Thought of.

The U. S. *Economist* has an article on International Trade, that contains much that should not be, yet is overlooked by many who write upon the policy and probable results of excessive importations. England manufactures, hence she is a depot for the raw material and produce of the commercial world. The United States produces a surplus of food, material for manufacture and gold. This surplus in large proportion goes to England and the continent. The great interchange has been between England and the United States, and this natural intercourse has progressed as follows: Exports from England to the U. States in 1842, \$17,117,219; in 1852, \$79,116,289; in 1856, \$106,083,112; in 1858, \$67,812,921; exports from the United States to England in 1842, \$38,234,511; in 1852, \$110,803,055; in 1856, \$160,741,372; in 1858, \$156,009,200.

Thus, the exports of the United States to Great Britain have been largely in excess of the quantities taken from her. These exports have embraced gold, which in the last ten years has become a staple mining production, and export of the United States. The figures for British exports do not include gold, as a matter of course, since they represent only British productions. For the same reason the United States exports do represent gold, which is a United States production. The fund accumulated in London to American credit by this large excess of exports is drawn against from all quarters, in payment of goods imported from other countries. These bills draw gold rapidly from London in years of active imports into the United States—more particularly in years of short harvests in England. When the English harvests are short, she is required to remit gold in the purchase of food, and in those years the sales of American breadstuffs become active; they stimulate larger purchases of goods, wines and silks of France, &c., and for these purchases the bills running on England for payment swell the amount of gold drawn from her. The English trade with the north of Europe has not increased in the same proportion as the United States trade in the same direction—as follows: Exports, England to north of Europe in 1842, \$93,011,012; in 1852, \$102,591,207; in 1856, \$170,451,021; in 1858, \$185,189,688; exports, United States to north of Europe in 1842, \$27,556,653; in 1852, \$39,370,307; in 1856, \$68,637,310; in 1858, \$61,581,104.

The increase of England's exports have been mostly to her own colonies, more particularly to Australia and New Zealand. The course of trade seems annually to become more clearly marked as between the production of manufactured articles and raw and tropical products. The largest portion of the increased exports of the United States are food, cotton and gold. The imports of merchandise from Europe and England are necessarily the products of their industry, which are the only means with which they can pay. We have a surplus of materials, of manufacture, of food and of gold. If we sell any or either of these articles, clearly the pay must be had in other commodities; and manufactured goods are the only medium in which England can pay. Unless intercourse between the two countries is stopped altogether, we must take pay in manufactures; and the more liberal the terms on which those

goods are received the greater will be the amount of our sales. It is the custom to ascribe the periodical revulsions which occur to "over imports,"—by which is meant, that we have imported goods to an amount greater than the proceeds of the article exported will discharge; and that, as a consequence, the volume of the currency here is reduced by the too extended export of coin, involving a fall in prices and great mercantile losses. This is, however, not the cause of the evil. The revulsions grow out of the fact that the goods are sold on extended credits, which depend upon a thousand hazards, the leading one being the chance of the crops. If these are bad, the goods are not paid for. If they are good, and do not find vent abroad, the results are the same. To assume that persons who buy on credit, and buy because they get credit, will take less on such terms if the duty is 5 or 10 per cent. higher, is simply absurd. While long credits are the means of extended sales, no rates of duty, however high, would affect the extent of sales to the value of a dollar.

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Two Heaps of Cow Manure.

The lesson inculcated by the following paragraph, from the pen of Hon. F. Holbrook, in the *N. E. Farmer*, is one of great value to the thinking farmer. How true is the remark of Mr. Coke, late Earl of Leicester: "The value of farm-yard manure is in proportion to what it is made of. If cattle eat straw alone, the dung is straw alone; the cattle are straw, the farm is straw, and the farmer is straw—they are all straw together."

"Not long ago I had four cows come up to the stable in the fall, which I thought might yield a good supply of milk through the winter, if well fed. I also had four other animals, cows and heifers, which were not expected to give much milk till the following grass season. The first four were tied in the stable side by side, and received each, in addition to hay and stalks, four quarts of small potatoes each morning, and two quarts of corn and oatmeal each evening, through the winter. As was expected, they gave a good mess of milk, and came out well in the spring. The manure of these four cows was thrown out a stable window, under the cattle shed, by itself. The other four animals were tied in the same stable, next to the first four, and received only hay and corn fodder. Their manure was thrown out by itself, at the next stable window, and under the same shed, so that the two heaps lay side by side. The heap made by the four cows that were daily messed with potatoes and meal, kept hot and smoking all winter, and was wholly free from frost. The heap made by the other animals that had only hay and stalks, showed no signs of fermentation, and was somewhat frozen. Observing this difference from time to time, curiosity prompted me in the spring to apply these heaps of manure separately, but in equal quantities side by side, on a piece of corn ground. The superiority of the corn crop, where the manure from the messed cattle was applied, over that where the other heap was spread, was quite apparent and striking; and called my attention more particularly than it was ever before directed, to the importance of feeding our best or richest products, if we would have the best kind of manure for our lands, and large crops from them."

The American Farmer.

Baltimore, November 1, 1859.

TERMS OF THE AMERICAN FARMER.

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N. B. WORTHINGTON,

Publisher of the "American Farmer,"

CARROLL HALL, S. E. CORNER BALTIMORE AND
CALVERT STREETS, BALTIMORE.

Business Notice—Fruit Trees, &c.

We are much gratified at the disposition evinced on the part of our subscribers to avail themselves of our Agency in the purchase of fertilizers this season. We shall keep ourselves entirely disconnected with any interest in this city, and having a personal practical acquaintance with the use and application of fertilizers, and a general knowledge of the various articles offered for sale, we know that we shall be able to be of service to those who seek our assistance.

The important matter of the purchase of fruit trees we shall give our attention to. We wish our friends to note that while we can furnish them on the best terms which they could make themselves, *we charge them nothing for commission*. We are enabled, by having many orders to fill, to compensate ourselves by the discount at which we purchase. Our orders for these will embrace all descriptions—Peaches, Apples, Pears, &c., and all the smaller fruits, at the prices of the best nurseries.

We are desirous of directing the attention of those who are taking interest in the cultivation of fruits to the Cranberry, without question one of the most profitable, where due attention is directed to it. It can be just as readily grown—and perhaps with more certainty—South of this as at the North, where the bloom is liable to be destroyed by frosts. While it is very productive under favorable circumstances, it has for marketing the great advantage that the fruit may hang on the vines for weeks after it is ripe, and may be kept for months after gathering. We can furnish fine plants from bearing beds—this is important, as some beds are barren—for \$5 per thousand or \$1 per hundred.

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In writing with reference to your paper, please state distinctly the post office at which you get it.

Dedication of the Agr. College.

The opening of the Maryland Agricultural College and its formal dedication, on the 5th of October, was an auspicious event for the agriculture of Maryland and for agricultural interests everywhere. It was an act of formal union between the labours of the field and science. It was a solemn consecration of the power, Knowledge, to the enlightenment and elevation of the pursuits of agriculture. The devotion of cultivated intellect to the redemption from its low estate of that noble calling whose work it is to renew the earth; to redeem it from the curse of barrenness; to restore it with the elements of fruitfulness; to make her fields glad with abounding harvests; her orchards, her vines and her fig trees with healthful fruits; to make her oxen strong to labour, and her sheep to bring forth; and by and through all these to build up homes, *country homes*, the hallowed nurseries of the nation's children. For this is the true scope and end of high culture, to fill the land with homes, that here amid scenes of comfort and beauty, in the very light of the glorious sun, and taking in at every inspiration the unmixed breath of heaven; that all abroad in the fields and the woodlands, the young life of the nation, may begin to live; growing up like the young plants in their simple dependence; rivaling the flowers in their innocent beauty, and the birds in their careless joy and trust; that away from the unhealthful atmosphere and the impure, corrupting associations of the city, the nation's children may be nursed into vigorous bodily health, and simple-minded virtue, and pure and undefiled religion.

A calling whose aims and ends are such, cannot be made a low and grovelling pursuit, except by the fault of those who follow it for mere gain, and cannot understand the work they have to do. He who builds up and adorns a country home is the very imitator of Him whose first care for man was to plant "a garden eastward in Eden;" and who made to grow out of the ground, "every tree that was pleasant to the sight and good for food." And it is the noblest and most fitting work of science, of learning, and of all the powers of intellect to make profitable and honorable, to adorn and to dignify the calling whose holy influences are felt at the very source of the nation's life; whose true husbandry is the nation's children; to rear and to cherish these in health and strength, in purity and innocence, and to fit them as far as outward circumstances may, so to do the work which God has given them here, as will best prepare them to enter on that better inheritance in the "new earth" for which we look.

The Grain Market.

The New York *Journal of Commerce*, of a late date, reports a movement in Breadstuffs which indicates a foreign demand which we had not hoped for. The freight engagements of one day, it says, for Great Britain, were greater than the total exports of wheat from New York from the first of January, 1859, up to that time. Of this, 30,000 bushels were engaged for Glasgow, and 15,000 for Liverpool; nearly 10,000 barrels of flour were also shipped.

It is ascertained abroad that the crops of grain are deficient, just as they are here, in the half bushel. With the same apparently good crop, it is yielding poorly to the straw. The shortness of the crop in the West is now being admitted. The New York *Economist*, which has been very persistent in its estimate of very large crops, admits now that they have been very much exaggerated, and charges that Western merchants have sent to New York these exaggerated statements, to enable them to buy their goods on credit, by the assurance of a great abundance of grain wherewith to meet their payments.

NEW AMERICAN CYCLOPEDIA—a *Dictionary of General Knowledge*, edited by George Ripley and Charles A. Dana.—We have from the Messrs. Appleton (through the politeness of Mr. Henry Taylor) the seventh volume of this valuable work, embracing the letters from EDW to FUE. We have spoken repeatedly heretofore in commendation of this Cyclopaedia as a work for every day reference and consultation on almost every branch of knowledge. The present volume is no disparagement to its general character, and the large amount of matter furnished in 800 well printed pages per volume, makes it very low at the minimum price \$3 in cloth. It ranges from \$3 to \$5.50, according to style of binding.

By reference to their advertisement, it will be seen that the well known agricultural publishing establishment of A. O. Moore, N. York, has been sold to Saxton, Barker & Co. Mr. Saxton has been long known as the senior partner formerly of the same establishment, in connection with Mr. Moore, and the publisher of the valuable Horticultural Magazine, the *Horticulturist*.

We call attention to the advertisement of one of the most beautiful and desirable estates to be found on tide-water in Maryland, a full and particular description of which can be had on application at the office of *American Farmer*.

Cost of Education at the Agr. College.

The charges made at the Agricultural College have been made, we find, the subject of comment in several of our papers not in an unfriendly spirit, but because of an apparent disappointment with reference to them. There seems to have been some anticipation of a very low rate of charge, which has not been realized.

In the first place, let it be remarked, the most generous confidence is due to the Trustees of this Institution, and they are entitled to the full benefit of the presumption, until the contrary appears, that they have settled this and every point in its government in perfect consciousness of the trust reposed in them, in careful consideration of the present and prospective means of the College, and with the strictest reference to its true and permanent interests. This presumption is due as well to the high personal character of the members of the Board, as to the fact that for years past, this has been a labour of love with them, costing much time and money, and that they have all contributed besides, (some of them very largely,) of their private means to its funds.

The question of the college charges was settled at one of the fullest meetings of the Board ever held, and was the subject of much consideration, with a sincere desire, we believe on the part of every member, to make them as low as could with safety be done. But just starting into existence with many important wants yet un supplied, it would have been mere folly to have hazarded any thing by putting the charges in the beginning at a point below that indicated by the experience of other institutions. In looking to this it does not appear that any institution, with any pretensions to the same advantages, has its rates below what is charged here, and covering all expenses. The charge of \$250 covers every thing but that of books and stationery, viz: Board, Instruction in English, Greek, Latin, French, German, &c., Mathematics, Agricultural Science, in fine as full and complete a course of academical instruction as the very best colleges offer; besides washing, use of furniture, fuel and lights. All these various items of cost were embraced in the one charge, because it was determined that the College should not be obnoxious to the complaint often made, of making a large bill of extras in addition to the published charges; that a parent in sending a son here should know in advance what it was to cost him.

Looking into the means of the Institution it will readily appear that it is not in a position to be generous. The farm has been purchased and necessary improvements made upon it, and a col

lege building has been erected capable of accommodating comfortably two hundred boys, besides affording quarters for Professors, lecture rooms, and housekeeping apartments. The furniture has also been put into it. All this has been done by private subscription. But while the closest scrutiny may be challenged to show one dollar of money misappropriated, all that is available of this fund is gone. The Trustees find themselves with this property in their hands for a certain purpose of the very highest consequence as they believe to the interests of the State, and it is their duty to manage it, not with any time serving policy, but with any reference whatever to private interests, but solely and entirely for the benefit of the Institution itself, and for the purpose of inaugurating and giving success through it, to what its founders conceive to be the best scheme of education that the wit of man has devised. They have no interest whatever, and can have none, in keeping the rates of charge above what may be necessary for the fullest success of the undertaking. Whenever it shall appear to them that they can properly be made lower, there is no doubt they will be made so. In the mean time let us trust that no one, who appreciates the enterprise, and wishes to see it prosper, will throw the slightest discredit upon its management, by a seemingly unfriendly criticism. There are always enough captious objectors and fault-finders to be encountered, let those who understand and value the peculiar features of this Institution extend to it their warmest sympathies and support. The readiest and promptest way to have the charges reduced, is to give it the largest measure of patronage and success.

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No "Worn-Out" Land.

It is a great point gained in a right course to call things by their right names. In agriculture, as in other matters, we are often misled by the use of phrases that convey false ideas. One of these, for instance, is the term "winter-killed," as applied to wheat; it should be "water-killed." There is no winter, probably, severe enough to kill wheat unless there is too much water in the land. As long as we say "winter-killed," we comfort ourselves with the idea of a Providential dispensation; but when we say "water-killed," we understand that the evil can be remedied, and we go to draining our lands.

So it is with the expression "worn-out lands." When men are persuaded by the constant use of this expression that their lands are "worn-out," they become very willing to sell out, and sacrifice valuable property for the benefit of those who un-

derstand the matter, and they themselves start off in search of such as are not "worn-out." Let it be understood that there is no such thing as worn-out land; that the expression conveys a falsehood; that even with our present lights, it is a very practicable thing, with a moderate degree of intelligence and skill, and no very large amount of means, to restore these lands to any degree of fertility they have ever possessed. This lesson has been well learned in Maryland and a large portion of Virginia, but our Southern friends of the Atlantic States, judging from our exchanges, have yet to learn it. Let them be told then everywhere, and constantly, that they have no worn-out lands—that in fact their lands were intended to last forever, and will last forever, and feed and clothe them and their children for a thousand generations. Yet our able contemporary, the *S. Carolina Farmer and Planter*, says, "It has just come to this point—we must go down hill, or go West—we can't stay here any longer, and live by planting without improvement." Let our friend tell his subscribers that here in Maryland we have tried all the alternatives, we have been "down hill," and many of us have been "West," and have abandoned both one and the other for "improvement," and know that that is the best thing.

We are led to these remarks by a letter in the *South Countryman*, written by the Rev. Mr. Best, of Cass county, Georgia, an intelligent gentleman, who after some years of farming experience in one of the finest portions of Maryland, has made a large purchase in the former State, and is, we have no doubt, reaping the advantage of his earlier experience, and giving those about him the benefit both of wise counsel and good example in the way of improvement. Mr. Best tells of the extraordinary increase in value of lands in Maryland by the mere use of clover and plaster; of farms which twenty-five years ago could be bought for ten and twelve dollars, being worth now fifty, sixty and eighty dollars per acre, and fully worth the difference, estimating by the increase of product; fifty bushels of corn per acre after wheat and thirty bushels of wheat per acre on fallow, are by no means extraordinary crops. The same may be said of other sections where lime has been the only extraneous matter added; Mr. Best relates his own experience in the use of Mexican Guano and its extraordinary results; the marvellous effect of Peruvian Guano is even more familiar; we have seen a tenfold increase of crop from a single dressing, showing all the difference between almost absolute sterility and the highest degree of fertility. Now what we wish to point out is the absurdity of speaking

of such lands as "worn-out," and the folly of using a term which conveys a very erroneous idea. Take the case of the land improved by the use of plaster and clover. Here is nothing whatever added but a bushel of sulphate of lime per acre, for a few successive years, and the result is the difference between six or seven bushels and thirty bushels of wheat, and fifteen and fifty bushels of corn, and all the difference between no grass at all and one and a half tons of clover. If it is said the wheat and corn come from the clover, then where does the clover come from? Not surely from a bushel of plaster. The whole matter is, that in adding what is a mere atom compared with the bulk of soil to which it is applied, we have done all that was required for a very high degree of fertility; a thing simply impossible were the soil in the least deficient or "worn-out" as regards all the other essential elements of wheat and corn and other crops.

The method of improvement suggested by Mr. Best is, without question, the true one; the deeper ploughing and clover growing. "I will sow clover seed," he says, "every month in the year until I find out the right time." Permanent improvement on a scale of any extent, without deep ploughing (a depth of at least eight inches) and the growing of clover or some good substitute, we consider out of the question. If there is any other method, we know nothing at all about it.

• • • New Things and Old Things.

Where is Sorghum? Where is Honey blade? Where is Wyandotte Corn? Where is Oregon Pea? Where is Rescue Grass? Where is *Morus Multicaulis*? Where? and echo answers where?

Here is an interesting catalogue out of any one of which a fortune was to be made in very short time, but of which men have not availed themselves, and which on diligent inquiry we find now almost "nowhere." There are certain old things which remain to us, wheat and corn, and tobacco, and cotton, but the new things "have passed away."

We are not willing to class the Sorghum in this list, but there is a silence this fall which is ominous. We hear nothing of the sugar, little of the syrup, and not much of it at all. As a forage plant we expected much, but the experiments of a French cultivator in the *Journal of Practical Agriculture* throw very great doubt upon it in this respect. He says:

"I will confess that the abundance of forage has won me as it has done others; but with certain facts before me, duly stated, I stopped and reflected. Perhaps in the absence of regular ac-

counts, we might have deceived ourselves; but with the figures before us we can come to no other conclusion: at the same time requesting the practitioners to renew their experiments carefully."

"The sorgho is not a violent poison for cattle; but if the effects observed, not only in my cultivation, but also in that of many of my neighbors, be frequently renewed, we ought necessarily to attribute to this plant a deleterious influence. On a farm which I occupy myself, twenty-five horned cattle have been fed exclusively on sorgho during a month; and from the precise day on which it was introduced in feeding the cattle, the journal of the farm shows a diminution of the profits of the dairy by one-half, and the same decrease was exhibited every month of feeding with sorgho."

We shall be glad to hear from our correspondents who have grown the Sorghum this year, as to its success in any of its various uses.

Hoping still the best for this, it is very well henceforth to bear in mind that all these various excitements have no other effect than to put money in the pockets of those who sell the seed, at the expense of the agricultural community.

The truth is that there are far too many of us willing to be humbugged; we are all making too much haste to be rich; we are all on the look out for short and easy methods of success; we are all anxious about large returns on small investments; therefore, we are very easily persuaded by promises of large premiums, to take a ticket in any new lottery that turns up. The agricultural lotteries are the "Rescue Grasses," the "Oregon Peas," &c.

It is the best thing about agriculture that there is no lottery in it; these seed speculations do not really belong to it. It does not open any royal road to wealth; it does not present any fast way to be rich. Its ways to success are the honest ways of straight-forward, hard work; the safe way of "little by little," the sure way of constancy, diligence and perseverance. Shed upon these paths the light of educated intelligence, and the revelations of science, and having done all that man may do, the sure blessing of a benevolent Providence awaits us. The rains may descend and the floods come, but as sure as the promise of seed time and harvest, is the assurance of ultimate success to the man, who stands truly and faithfully to his work.

Let us not become excited then over new things; either new seeds or new plants, or new lands; wheat is an old thing, but wheat, though it has its enemies, will do if we work it right; grass is an old thing, and has its enemies, of which we, the cultivators of the soil, are the greatest, for we kill it constantly and rarely cultivate it; yet the grass is a very good thing.

Corn is an old thing, and is treated by us worse than any thing we plant, but what farmer in ten thousand so rash as not to plant corn? This is universal testimony to its value. So apples are old, and peaches, and pears, and grapes, and figs and all the sorts of fruits, but are they not good? Finally, our lands are "old" as we say in these old States, and so they are in the sense that the "everlasting hills" are old, but "worn out" they are not. They are good lands; abused they may have been, but they are good. And it is only another phase of the folly which is craving after new things, which is tempting our young men constantly to seek new lands. It is the constant haste to be rich by new methods which is the curse especially of our old States. Wise men will be satisfied with the old things and strive to do better with their wheat, and corn, and cotton, &c., and will especially stick to and improve their old lands, but those who will make haste to be rich, will be forever after new seeds, new plants, new ways, and new lands; for as Solomon said long ago, "the eyes of the fool are in the ends of the earth."

Laying Out the Flower Garden.

This is appropriate work for the autumn season. In the spring there is so much work to be done elsewhere that it is difficult to find much time for the garden. All that it is possible to do at this season, should be attended to in October and November.

The ordinary manner of laying out a flower garden is to surround the whole ground laid out for this purpose with a border for plants, and perhaps the remainder is sodded or sown to grass. This is, of course, the most simple, but by no means the most tasteful or pretty. It is well, perhaps, where a large number and great variety of plants are to be set out, to have such a border planted with the tall herbaceous plants and coarse growing annuals and biennials. It will also be an appropriate place for flowering shrubs.

In most cases, however, the best effect will be produced by cutting out of the turf at intervals along the paths, small beds of various shapes. Some of these may be planted with choice low flowering shrubs; others with various annual and bedding-out plants.

The best effect is produced, we think, by appropriating each bed to one kind of plant. Thus, a bed of scarlet geraniums, another of heliotrope, one of mignonette, another of petunias, others of verbenas, etc., may be planted with very fine effect. This we consider the most satisfactory method of planting. If beds of mixed plants, however, be preferred, be careful that those selected are of a similar habit of growth, and that they harmonize in color. One or two beds near the house should be reserved for flowering bulbs, as tulips, hyacinths and the like. These give a very gay appearance to the garden in the early spring when there are comparatively few flowers in bloom.

As to the shape of the flower beds, they may be oval or irregular in form, but never square, triangular, or fantastic. We have seen them like a spread eagle, and several other uncooth forms; but these are in gross violation of good taste. A round bed in most situations is not pleasing; it may be used sometimes for variety. Oval or palm-leaf shaped beds are always pretty. Variations of these forms will suggest themselves to any person of tolerable judgment and taste.

Particular care must be taken in this matter of laying out a flower garden, that the turf be not completely cut up, and the effect of a broad expanse of lawn lost by too many of these small beds being made. It will be better, in all cases where there is but a small extent of ground, to have a border round the whole, and but few beds in the turf.—*Country Gentleman.*

Breaking Colts.

A writer in the *Country Gentleman* says: "As some of your subscribers are troubled with their horses hugging the reins, I will give you my method of breaking colts. First, I put on a high part mouth bit—(bridle with no blinds,) put on the harness one hour in the forenoon and one in the afternoon, with breeches straps hanging about the legs—crupper-pad six inches round. Do this for a week, tying him on both sides of the stall, reined moderately. Then change the bit to a chain-bit, placing him between the poles of a double wagon, between two steady farm horses, and have him so regulated by the reins that he can neither pull to much nor fall back—the old horses having control over him by the breeches and reins. Keep him in daily, till he learns all that is necessary when he is spoken to, seldom driving off of a walk. Never hitch a young horse to a harrow, plow or cultivator, till he is thoroughly at command in the wagon, which will take often six months. Drive with blinds if the colt is timid or lazy.

"If disposed to kick in handling, tie up his head as high as possible alongside of the barn, and then give him a white birch bush till he can be handled quietly. One good dressing will do the business. Bitting a colt as some do, and allowing him to walk about the yard, I have found to spoil him. Standing quietly afterwards, when my colts are broken, they need no hitching, however wild when taken in hand, but are trusty in all respects. Never give a colt in the hands of a brute of a man to break, if you expect him to be docile, for like gets like—a mulish man turns out a mulish horse.

"If you wish a serviceable horse, four years is as young as he should be deemed a horse; he can be well broken before that by my method, with little hindrance about a farm, and is worth three horses that are put to draft at two parts.

"You will perceive the pad of the crupper being made large, not only breaks the colt of that hugging practice in putting on the crupper, but he carries a better tail, and has never the power to hug the reins, and if disposed to bolt, a few rods with the reins with a chain bit, will quiet him for that. Never check a young horse too much when walking in harness, for it is apt to spoil his reach, and give him a hitching gait."

Can the Pear be Grown with Profit.

BY L. B. BRECKMANS.

This is rather a complicated question, and I do not know how to answer it as briefly as I should wish to do. As far as my personal conviction is concerned, I have no hesitation in replying in the affirmative, provided we stick to the following rules:

1. The selection of a proper soil. All soils are not suited to the Pear Tree.

2. A locality sufficiently free from excessive moisture, and rather rolling than too level and flat.

3. The judicious and careful selection of hardy, handsome, productive and good varieties, selling not only as good, but also as fair and inviting fruit.

4. The selection of stock. Some Pears, if not all, growing upon the quince, are better upon that stock than upon the free or wild Pear stock. No Pears are nor were ever good upon the Hawthorne, Amelanchier, Mountain Ash, &c. We have tried that twenty years ago, and never succeeded in producing any good fruit, although we made trees grow finely for the first two or three years.

5. The proper attention and care bestowed to the tree, which must be more than that given to the Apple, Peach, or Plum. Next to the Grape, the Pear requires the greatest attention and skill. It is not everybody's business to raise handsome fruit, and to *form* trees which, in a season of abundance, will have their fruit so equally set and distributed all over the tree as not to split and break the limbs, as is so often the case.

Let us remark that the greatest care is only needed when the tree is very young. After it is once well shaped and sets to bearing, it sends out less rank wood and takes better form and habits.

It would take more words than I can compress in an essay to lay down the rules of judicious pruning, without which there is no future for the Pear Tree, at least in most cases, among the most refined sorts. We must confine ourselves to a few remarks upon the profits and the choice of varieties suited to the market. In the vicinity of Boston, for instance, most handsome profits are realized from the Pear crops. Although, judging from the quantity of Pears grown around that city, we should deem the market to be overstocked, still Pears sell in Boston from 50 cents to over \$4 per dozen. Some cities, as Philadelphia, have only a few inferior Pears in the market, and would pay any price if they could get these in some quantity. Two years ago the editor of the *Horticultrist* wrote me: "Much is written about Pears, but we cannot buy any in our Philadelphia market—please let me have some, for love, for begging, or for money!" In fact the Pear is considered such an aristocratic fruit, (if I may use that term,) that those who grow them keep them for their own family, friends and visitors, as one of the finest luxuries. I have seen as much as \$6 paid for a dozen of handsome Pears in Boston, (in December,) No party is fashionable among amateurs without at least one fine dish of Pears. Messrs. Hovey, Austin, and many others, sell Pears in large quantities, with very handsome returns. From New Jersey, Western and Northwestern New

York, large quantities are sent to New York City. Col. Jno. Hebron, in Mississippi, makes his Pear Trees pay, and over. And when we consider that Pears, *to be good*, must be picked a few days before ripe, it seems just the article for transportation to distant markets. I have no doubt I can pick fine full grown Bartletts, pack them in barrels, send them to New York, or Quebec, or Havana, and when they will be at the port of destination, and leisurely unpacked, they will just be in the very best condition to go to the market or to the table. In regard to the facility and security for, and the very improvement of the fruit *by* transportation, no other fruit can compare with the Pear, not even Oranges and Lemons—the Pear and some Apples being the only fruit which *require* picking from six to eight days before maturing, to bring it up to its true quality. To make a Pear orchard pay, we need only the necessary skill and care, a well cultivated soil, and a climate where the bud is not exposed to be killed by 20 degrees below 0, or by the uncertain springs of the North. We have not to care about markets—for such fruit they are everywhere, because it bears, and rather demands transportation.

Let those who have the means, time, skill, and a little patience, try the experiment. They will find out that a well planted and well directed Pear Tree comes into bearing sooner than an Apple, and almost as soon as a Peach tree—that in this climate the crops are more regular and certain—that the Pear Tree can be considered as an annual bearer, while Apples are not, and Peaches are very uncertain. The season of blossoming for the hundreds of varieties of Pears is so protracted, that only a score out of a hundred will be in blossom when a spring frost sets in, and the others will either have set their fruit or be dormant, and consequently out of danger, with an ordinary slight spring frost. I have reasons to consider the blossoms of a Pear Tree more hardy than that of a Peach or Apricot. Few worms attack the Pear—the rot, the oidium and the curculio are strangers to it.

The best season to bring Pears into the market would seem to be from the months of September to December, (Winter Pears being better suited for amateurs, as requiring too much watching and extra care;) then the Peach is scarce, the Plums and Figs are gone, and the Winter Apples have not yet taken its place in the market. This remark applies to our home markets. For the markets of the North the very earliest Pears are the best.

I have partly answered the question of soils and localities. I shall only add, that deep sandy loam soils, rather dark than light colored, Western, Eastern and Northern aspects, and rather elevated localities, seem to be the best for the health of the tree and the setting of the blossom; and that southern latitudes agree better with the Pear than higher latitudes, where often winters from twenty to thirty degrees below zero prevent all reliance upon a fair crop of refined fruits, such as Pears, Peaches, and Grapes.

I shall not set the time when the South, from Virginia to Alabama, shall be considered the fruit garden of America, but I am fully convinced that such a time must and shall come, and that thousands of acres, unfit for cultivation of cotton

and rice, will be converted into remunerating orchards.

All we want is a little patience—a rare thing with a *fast* people. We must consider that fruit trees are different from sweet potatoes, although they do not require more, if as much care, and that the planting of rows of fruit trees in the field, at convenient distances, will not materially interfere with the crops of potatoes, cow-pea or vegetables, or any low growing crops that will not smother the young trees. If, moreover, we will consider that soils exhausted for ordinary crops, still retain a great deal of the constituents required for a tree, it will be evident that fruit can often be obtained where other products must fail.

We have yet to find out what sorts of Pears are best suited to our Southern latitude. Every season, almost, brings us new Peaches, Grapes, Pears and Apples, superior to the older varieties, which will slowly work their way to the head of the list of prominent fruits. Among the native and foreign varieties, many have been found to be well adapted to our climate. We have a great deal more in expectation, and among my select seedlings, collected from this and distant countries, many give fair promise of being ranked, at some future day, among our best and certainly our most hardy and vigorous varieties.

Permit me to conclude this already too long chapter on Pears, with some remarks upon the different opinions about this fruit.

The mistakes and deceptions which have so often occurred, and have discouraged many zealous amateurs, are mostly the result of unwise selections of old worn out varieties, discarded and given up their native localities and sold here, not as refuse and unsaleable stock, but under good sounding or false names and which must have proven, as they did prove, indeed, dead failures. The newly obtained varieties are undoubtedly (and with some few exceptions,) the most vigorous, symmetrical and hardy. Of all the Pears cultivated at present as leading varieties, a few only can be traced as far back as Duhamel or even Poiteau, (edition from 1785 to 1810.) The Duchess, the Beurre Superfin, the Beurre D'Anjou, the Belle Lucretive, the Clairgean, and many others of our best leading sorts, were not known twenty-five years ago. I have hundreds of seedlings, selected from among thousands, with which I would not part for any consideration, so sure do I feel that some day they must take the place of such varieties as I do not consider as perfectly adapted to our latitude or to our wants. We must have hardy, beautiful, vigorous, productive trees, easily cultivated in all soils, and more easily kept in the right form and shape, with good or best and large fruit. What the last twenty or thirty years of experiments or good chances have done in that way, will be nothing compared to what is at present going on in our great Union. Seedlings are brought to notice every season from Maine to Alabama.

It has been my good fortune to be connected with many influential and well informed gentlemen, and thus to have got a chance to test most all the novelties here in the South, at the same time that they are submitted to the judgment of amateurs in other parts of the Union. Let us not judge the *Cultivation of the Pear* by the

worthless varieties which have induced people to say Pears will not do in _____ (no matter what state;) it was the same in all States. When I first became acquainted in New Jersey, I was told "Pears would not do well just there," and now Professor Mapes, Doctor Ward, William Reid, and many others, realize handsome profits, and have fine, almost certain crops every year. And why? Because they wisely discarded the old, sickly and run out varieties of the old catalogues, when Pear culture was in its infancy, and took to the new sorts endowed with all the vigor, beauty and fertility of renovated products.

I have thus far spoken of the Pear Tree as a producer, in competition with other fruit producing trees of our latitude; but if we come from the orchard to the garden, will find the Pear Tree the most indispensable, ornamental and convenient tree to be placed around dwellings and among our flowers and shrubbery. What is equal in beauty to a well managed and sound Bartlett, Superfin, Michel, Archangel, Buffum or Urbaniste?

But we must conclude, and we will do so with a wish that more effectual and persevering efforts should be directed to that branch of rural economy. In a climate and with such a soil as ours, we must have the best Pears, as we have already the best Peaches and Grapes, to say nothing of our delicious Apples. We have the choice of localities, plenty of room, and the means to try experiments. We shall not remain behind when all the North, much less favored by nature and climate, is fully alive to the importance of this question.

On the Feeding of Stock.

The feeding of stock is exactly one of those subjects which can be most successfully advanced by studying the principles on which it depends; and though these involve many most complex chemical and physiological questions, we have obtained some foundation on which to go. The food which an animal consumes is partly assimilated and partly excreted, but, if it be properly proportioned to its requirements, its weight remains constant, and hence we learn that food does not remain permanently in the body. If, now an animal be deprived of food, it loses weight, owing to the substance stored up in the body being used to maintain the process of respiration and the waste of the tissues. The course of events within the body is, so far known, somewhat of this kind. The food is digested, absorbed into the blood, a certain quantity being consumed to support respiration. If the food be properly adjusted to the requirements of the animal, its weight remains unchanged—the quantity absorbed and that excreted exactly correspond to one another; but if we increase the food, a part of the excess will be deposited in the tissues to add to its weight. Now the quantity absorbed depends upon the state of the animal—a lean beast thoroughly exhausting its food, while, when it is nearly fat, it takes only a small proportion. So, likewise, if the quantity of food be greater than the digestive organs can well dispose of, a certain quantity escapes digestion altogether, and is practically lost.

The problem which the feeder has to solve is, how to supply his cattle with such food, and in

such proportions, as to ensure the largest increase with the smallest loss. In solving this problem we must, in the first place, consider the general nature of the food of all animals, the constituents of which may be divided into three great classes the nitrogenous matters, which go to the formation of flesh; the saccharine and oily, which support respiration and form fat. It is sufficiently obvious that as the two great functions of nutrition and respiration must proceed simultaneously, the most advantageous food will be that which supplies them in the most readily assimilated forms, and in proper proportions. In regard to the first of these matters, it will be obvious that if two foods contain the same quantity of nutritive matters, but in one they are associated with a larger quantity of woody fibre or other non-nutritive matters, the latter will have considerably less value than the former.

The necessity for a proper balance of the two great classes of nutritive constituents, is also sufficiently obvious; for if, for example, an animal be supplied with a large quantity of nitrogenous matters, and a small amount of respiratory elements, it must, to supply a sufficiency of the latter, consume a much larger quantity of the former than it can assimilate, and there is practically a great loss. We may determine the proper proportion of these substances in three different ways—1st, we may determine the composition of the animal body; 2nd, we may examine that of the milk, the typical food of the young animal; and 3d, the results of actual feeding experiments may be examined. But, however valuable the data derived from these experiments may be, they are less important than those derived from actual feeding experiments. In fact, it by no means follows that the proportions in which the different substances are found in the animal are exactly those in which they ought to exist in the food. On the contrary, it appears that while one-tenth of the saccharine and fatty matters are assimilated by the animals, only one-twentieth of the nitrogenous compounds, and one-thirty-third of the mineral substances in the food, are assimilated by the animal. On the other hand, however, it must be remembered that the particular compounds also exercise a very different influence. Thus, a pound of fat in the food, when assimilated, will produce a pound of fat in the animal? but it requires about two and a half pounds of sugar and starch to produce the same effect.

The broad general principle arrived at is, that we must afford a sufficient supply of readily assimilable food, containing a proper proportion of each class of nutritive substances. But there are other matters to be born in mind, for the food must not only increase the weight of the animal, but also support respiration and animal heat; and the quantity of food required for this purpose is large. It appears, from Boussingault's experiments, that in a cow eighteen ounces of nitrogenous matter are required to counterbalance the waste of the tissues—a quantity contained in about ten or twelve pounds of wheat flour; and it is well known that an ox expires four or five pounds of carbon daily, to supply which one hundred pounds of turnips are required. We see from this the large quantity relatively to that used up which is required for the maintenance of these functions, and the importance of adopting

such measures as, by restraining them within the narrowest possible limits, produce a saving of food. The diminution of muscular exertion, and keeping the animals warm, so that a small quantity of food may be required to act as fuel to maintain the animal heat, are the most important considerations. Although the presence of a sufficient quantity of nutritive matters is an essential qualification of all foods, their mechanical condition is not unimportant, for unless its bulk be such as to admit of the stomach acting upon it properly, there must be an appreciable loss; and there is no greater fallacy than to suppose that the best results are to be obtained by the use of those which contain their nutritive matters in a very small bulk.

As a practical question, the principles of feeding are restricted to determining how the staple food produced on the farm can be most advantageously used to feed the cattle kept on it, and on this point much requires to be said. It appears that they can be best made use of when combined with more highly nutritious food, such as oil-cake or rape; and when this is properly done, a very great advantage is derived. It appears from experiments that sheep which, when fed on hay only, attain a weight of ninety pounds, reach a hundred when rape is added.—*From a Lecture by Dr. ANDERSON, at the Highland (Scotland) Society's Show.*

Willie is Dead.

BY CHARLES BOYNTON HOWELL.

Sadly sigh, sadly sigh,
Winds of the autumn-tide!
Murmur low, murmur low,
Down by the river's side:—
For darling Willie slumbers there;
He left us all in deep despair.
And sorrow's keen and piercing darts
Found way into our mourning hearts.

Mourn no more, mourn no more,
Winds of the autumn-tide!
Though Willie's form, though Willie's form,
In the grave by the river's side
Is sleeping where no sunbeams come,
All silently in his narrow tomb—
His *soul* is roaming glad and free
In the glorious realms of eternity!

INDUSTRY.—Toil is the price of sleep and appetite, of health and enjoyment. The very necessity which overcomes our natural sloth, is a blessing. The world does not contain a briar or a thorn, that divine mercy could have spared. We are happier with the sterility which we can overcome by industry, than we could be with the most spontaneous and unbounded profusion.—The body and mind are improved by the toil that fatigues them; that toil is a thousand times rewarded by the pleasure which it bestows. Its enjoyments are peculiar; no wealth can purchase them, no insolence touch them. They only flow from the exertions which they repay.

The Indians are getting troublesome in Kansas.

The American Guano.

American Guano Agency,
55 W. Pratt street, Balto., Md.

MR. EDITOR: In the October issue of the "Farmer" we find an article by Dr. Piggot upon "Jarvis Island" Guano, and an editorial upon the subject of "American Guano;" the apparent object of both being to show that the article known as "American Guano," which includes that imported from both Jarvis and Baker Islands, in the Pacific Ocean, is not worth to the farmer the price which is being asked for it in this market. To prove the correctness of this view, you figure the money value in comparison with that of "AA Mexican," to which it bears no more resemblance in its component parts and chemical combinations, than does Peruvian to the Super-Phosphate of Lime, as was shown in the very able article upon the subject by Dr. Morfit, published in the "Farmer" Supplement of September 15th. The condition of the phosphates in our Guano is entirely different from that of other Guanos, and is such as renders its action prompt in immediate fertilizing power, as well as durable for the requirements of succeeding crops. It plays the role for the farmer of the nimble sixpence; for apart from its peculiar and valuable phosphatic condition, it has a physico-chemical temperament, enabling it to seize and utilize the ammoniacal emanations in proximity with it.—Other Phosphatic Guanos on the contrary—even when their components are not "hide-bound" by alumina and iron—are sluggish in action, and may be likened to slow shilling investments, which yield but a tardy assistance to the soil, and bring forth only meagre profits. But while we have the best scientific testimony of its value in Dr. Morfit's paper, we have also the *practical results* of its use from the farmers, who upon a fair and impartial trial have invariably pronounced it equal, if not superior, to any other guano or fertilizer in use. The practical tests are the ones on which we most rely as fixing the true value of our Guano, and by the results of such tests we are ready to risk its future reputation.

Permit us therefore to object to the standard of money valuation which you would arbitrarily assume for it, and allow us to say that we would prefer leaving the decision of that matter to those whose practical knowledge of the article enables them to judge more intelligently than parties whose opinions are based simply upon scientific theories, or warped by an interest, either direct or indirect, in some other guano or fertilizer.

In conclusion, we would offer you our thanks for that portion of the article referring to the "Black Hawk's" cargo, as in admonishing the agricultural public to discriminate as to the several cargoes, in purchasing parcels for trial, you have done—possibly without intending it—a good service for the enterprise which we represent in this city. Our interest in "American Guano" began with the "Henry Brigham's" cargo, which is characterized by being loaded with lumps of the *mixed* phosphates, and as has been fully confirmed by the more recent importations, "it presents the material in closer conformity with the *actual* condition of the deposit, than the 'Black Hawk' and other earlier cargoes;" the latter being in powder throughout, must have been taken,

as Dr. Morfit has sagaciously suggested, "from the surface portion, or as it were, the outcrop of the mine." *They are not on sale by us*, nor do they express the improved condition and great value inaugurated in the "American Guano" by the "Brigham's" cargo. We have in our possession a thorough analysis of the "Black Hawk's" cargo, by Dr. Morfit, which shows it to be of *even less* value than Dr. Piggot concedes to it; and we might have long since published the same, to show the wide difference in favor of the "Brigham's" cargo, but deemed it inexpedient however to let our zeal thus outrun the courtesy due to brethren in the trade, and so abstained from meddling with what did not directly concern us.

A. H. ANGELL & CO.

October 24th, 1859.

The above was received at too late a period to allow us the opportunity to notice it at length if we desired to do so. We do not think however that it is necessary. Our notice in October was rather for the purpose of caution, that our readers might not be led to dip too largely into this article before giving it a trial. We shall be very glad to find that it has been carefully tried and that in fact it comes fully up to what is promised for it.—ED. AMER. FARMER.

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[For the American Farmer.]

GOLDEN BREASTED TURKEY.—(*Aurum Petus gallus Indicus, or Agmi.*)—General plumage black; back gray, breast glossy green, orbits naked and red. The feathers of the head are downy, those of the lower part of the neck squamiform, of the shoulders ferruginous, loose, pendulous and silky, scapulars long and hanging: nearly twenty-two inches long and about the size of the common domestic fowl. Owing to the shortness of its wings and tail the *agmi* flies heavily; but it runs very nimbly, like the partridge; and when compelled to rise on the wing, it halts every now and then on the ground or on some branch of a tree. The female has two or three broods in the year, and lays at a time from ten to sixteen eggs of a light green cast, nearly spherical and a little larger than those of the domestic hen. She places them in a hollow which she scratches in the earth at the foot of a tree, and without the interposition of any foreign materials. The *agmi* will frequently stand on one leg, and sleeps with its head drawn in between its shoulders.

These birds are spread over the warmer parts of South America, and are found in pretty numerous troops in Guiana. As they scarcely attempt to elude the sportsman's approach, a whole flock will sometimes fall victims to their familiar and confident disposition.

But this apparent carelessness is not the effect of stupidity, for few birds are more attached to mankind, more docile in a domesticated state, more sensible to attentions, or the want of them, or more intellectual. The *agmi*, in short, among birds is in some measure the counterpart of the dog, among quadrupeds. Like the latter it is obedient to the voice of its master, follows or precedes him on a journey, quits him with regret, and hails his return with gladness. Sensible to caresses, it repays them with every expression of

affection and gratitude, and if any person approaches very closely to its master, it testifies its unmeasness and jealousy by darting on the legs of the intruder. It delights to have its head and neck scratched, and when habituated to this indulgence it is very impertunate for its renewal. It recognizes the friends of the family, and honors them with its civilities, but it harasses other people without any apparent reason, and will even pursue them as foes. It attacks with singular obstinacy animals larger and better armed than itself, and never quits them till it puts them to flight.

In several districts of South America it is entrusted with the charge of the poultry, and even of the sheep, which it conducts home every evening. Besides a shrill cry, like that of the turkey-cock, it frequently utters a hollow noise like that of the trumpet, conveyed as if from the interior of the body, and which seems to be a signal for calling the stragglers together, for it is readily decoyed by the imitation of it. Its flesh, though dry and hard, is not unsavoury, and that of the young is still more palatable.

J. JACOB BOWER.

Agricultural Experiments, and How they are to be Used.

We have ever been earnest advocates of testing science by practice; and that it might be accomplished, we have urged, perhaps even vehemently, that our readers should make experiments in this or that matter, wherever there occurs a reasonable chance of success and a need of knowledge. Recorded in our pages, it would remain for all who might wish to consult the experience of others as a basis for their own operations. This we reiterate. At the same time we would warn all not to conclude too hastily—not to take the result of a *single experiment* as a rule, on which to found their calculations. The instructions which nature imparts to us are given singly. Our knowledge beyond certain evident truths must be well earned. In everything we must *seek*, and that diligently, before we shall *find*, to our satisfaction.

Surrounding circumstances, also, must be the same in every trial, else the result will not be the same. One man may produce a hundred bushels of corn to the acre, while another, on the same land, with not *very* different management, might produce only fifty. Even the variableness of the two seasons might cause a vast difference. Hence, no single fact in experimental science is sufficient to found a theory upon. One may conceive an idea, and make experiments to determine its correctness, but in a vast majority of instances, one experiment, and often many, will not settle the question. It is a work of time, of patience, and not seldom of expense. To the same purport is a portion of an article in the *Rural New Yorker*, which we quote: "Another defect in our system of tillage, and the one which exerts the most deleterious influence upon American farm literature, is our proneness to *jump at conclusions*. From the very condition of the case, all the knowledge attainable must come slowly. Nature gives but a single lesson in a year, and in the advancement made there can be

no mushroom growth. Not a single reason exists why our chosen calling should not possess as stable and truthful a written history as any other science—why all the fallacies with which it is now cumbered should not give place to facts, if those who compose the rank and file of the great producing army do but will that such change shall be effected. Each individual should have a portion in this occupation, throwing in his ray of intelligence, the aggregation of which shall cast light upon the dark places in our pilgrimage. Let us have the results of well-conducted experiments—not alone those terminating in pleasant and profitable returns, but those also which yielded neither gratification nor pecuniary reward. Thus only can we avoid the difficulties which environ us, and walk abroad in a path everywhere marked with the manifestations of prosperity."—*Connecticut Homestead*.

Unruly Animals.

I will tell you how I avoid having unruly animals. I believe that as a general rule our domestic animals are never unruly, except as they are taught by their owners, or those having charge of them. Some persons, when removing stock from one field to another, will let down a few of the top bars; or if they don't happen to have bars or a gate just where they wish to turn through, they will throw off a few of the top rails and force the animals to jump the balance; and after driving the stock over, they will put up a part of the bars, or rails thus thrown down, leaving the fence lower in that place than any other, as a temptation to the stock to jump back at the place where they had been taught to go over.

Now, sir, my practice is the reverse of all this. If I wish to turn hogs, sheep, or calves through a common rail fence, I make what is termed a slip-gap, letting down just enough of the bottom rails to let the animals pass, thus teaching them to go *under*, rather than *over* the fence; and in letting large cattle through bars, I prefer to have a bar at the top, letting them pass under; and if it rubs their backs a little, all the better. But there is another fault, too common with some farmers. If fences are poor, in consequence of a scarcity of material, they should be the more carefully watched; if a rail gets thrown off, put it on immediately; if weeds, grass, or anything else grows near the fence, on the opposite side from where your stock run, tempting them to reach over, and by this means push the fence down, remove the difficulty immediately out of the way. I am well satisfied that with proper care there is no necessity of having unruly stock, even with poor fences. Give them plenty of food and water; keep them comfortable, and they will not be unruly, unless you teach them. I have raised several bulls within the last few years, some five or six of which I have sold; none of them have, to my knowledge, ever jumped a fence. One of them, now four years old last spring, is owned by a man whose fences are very poor; and although a bull owned by a near neighbour of his, two years younger, is in the habit of jumping any fence that comes in his way, in the neighborhood—even in or out of the field where this bull was at the time—he still maintains his orderly character.—*Ohio Farmer*.

Fall Plowing.

EDITORS GEESSEE FARMER: In the northern sections of our country, in consequence of the short *spring* time, for preparing the land for our grain crops, corn, potatoes, &c., it is a matter of much consequence that everything should be done in the fall that can serve to lessen spring work, such as plowing green-sward, corn, and other stubble grounds, intended to be sown with grain and grass seeds the succeeding spring.—These matters are all ably treated upon in your quotation from the *New England Farmer*, written by Mr. F. Holbrook, some years since. He says: "From the last of October to the middle or latter of November is a good time for plowing land, preparatory to sowing or planting in the following spring." Upon some accounts this late plowing may possess some advantages over that of August or September plowing; the weather is cooler, and usually the farmer is less hurried with other labors of the farm. But it is the opinion of some of our best farmers, that inverted sod-land, turned over early in September, will produce better crops of corn, oats, &c., than the same land would if plowed as late as the middle of November. Direct experiments have proven the correctness of the opinion in favor of early plowing. The reasons for this seem quite obvious. The vegetable matters of the green-sward, turned over in the warmer weather of August and September, will soon after begin to heat and decompose; gases of various kinds will be evolved and absorbed by the soil, if of a loamy and clayey nature, and they will mostly be retained for the use of the succeeding spring crops. Portions of the potash, lime, and other mineral ingredients of the soil will be liberated by the action of the carbonic acid, ammonia, &c., formed during the decomposition of the vegetable matters plowed in; but no such fermentation will be likely to occur in the soil of the November plowed land, and the rains and snows of winter will so compress the inverted soil that the decomposition of buried vegetable matters will be much less perfect the following season. Your remarks, that "the great error in fall plowing is in not plowing early enough," in my view, is to the point, and correct. Heat, air, and moisture, are all requisite for the decomposition of vegetable and animal matters. The early plowed lands have all these requisites, while the late plowed are mostly deprived of these necessary conditions.

However, all farmers can not do as they would like in these matters. Some must necessarily delay plowing till late; others may have doubts in reference to the correctness of our views. To such, we would simply suggest an experiment in early and late plowing of a field of green-sward. Farmers differ widely in their views in regard to plowing, beside those of early and late plowing, viz: as to the proper depth to which the plow should be gauged, as also in the width of the furrow-slice, and whether it should be completely inverted or left at an angle of 45°—that is, laphurrowed. All these matters, in a measure, depend upon certain contingencies, and admit of considerable variation; therefore, farmers should experiment and investigate for themselves, and not trust too much upon what this or that man may say or write.

Some of the farmers, whose farms border the

Merrimack river, in this State, I think, practice a very judicious course of cultivating their alluvial and other deep loamy soils. I do not see how they can well improve upon their system of culture. The system pursued by the farmers referred to, is, with a strong team, to plow their sod-land in the fall, (some of them early in September,) to the depth of ten or twelve inches, some making use of the double or Michigan plow; for reasons, others prefer the common plow. The land remains as left by the plow until spring; then a wide harrow is run over the field, after which the manure is carted on, spread and plowed in to the depth of four or five inches, and again harrowed. This preparation makes the after culture, &c., very easy; the result is, a crop of sound corn, ranging from sixty to eighty bushels per acre.

The plowing of corn and grain stubble in autumn, for a succeeding crop of oats or other grain the following spring, has been recently practiced here to some extent. It saves time in the hurry of spring work, as the ground is readily prepared by the cultivator and harrow for the reception of the seed. The crops are thought to be equally good, if not better, than if the ground had been spring-plowed, and generally the seed can be sown earlier. For oats and barley, early sowing generally proves the most profitable.

LEVI BARTLETT.

Warner, N. H., Sept. 14, 1859.

Cassius M. Clay on Birds and their Food.

At daybreak, I estimate that 400 songsters break forth into one grand jubilation of mingled songs, on my thirty acres of fruit and pleasure grounds. Among these I note the cat bird, the thrush, the blue, black and red birds, the bell martin, the dove, lark and quail, the sparrow and humming-bird, robin and jay, the house, porch and barn swallows, and many varieties of orioles, woodpeckers, sapsuckers, &c.

To-day, my mind running upon the use of birds, I took my position about fifteen feet from the nest of an oriole, built in the top of a peach tree, twelve feet high, to observe their habits. The nest is formed of blades of blue grass, worked into a basket form on the limbs of the peach tree acting as braces. This variety has the female of a dusky bluish yellow—the male black-headed, and blackish wings, with a brick-dust or robin redbreast color on the breast and sides. There are four young ones, well-fledged, which every now and then stand upon the edges of the nest, and try their wings. I lay upon the green-sward a long time, and observed the movements of the parents, with my watch in hand. They made a visit with food about every four minutes on an average, varying time from two to six minutes. They would light upon the black locust trees, the vine, the grass, and other places, clinging at times to the most delicate and extreme points of the leaves.—I observed plainly green and brown grasshoppers, caterpillars, and smaller flies; sometimes one, and sometimes as many as six were plainly fed to the young ones, whose heads I could see above the nest. They would also carry back the refuse litter from the nest, dropping it 50 yards or more off; which same

thing I saw the brown thrush, which has its nest in a climbing rose about 40 yards off, also doing; they having four young ones.

INSECTS.

2 birds making a visit every 4 minutes—1 in 2. 60 minutes divided by 2—30 visits in an hour. 4 worms on an average—120 worms to the hour. 6 working hours—720 a day. 200 pairs on the grounds—144,000 a day. 200 pairs in 30 days—4,420,000 a month. 200 pairs in 8 months—353,500,000. 200 pairs old ones, do. by 2—707,200,000 in the season. 400 crows, do. by 2 do.—1,414,400,000. 400 do. eating 4 times, by 4—5,657,000. Crows and birds together—6,364,800,000.

Double the estimate of birds and crows, which I think fair on my farm, and we have—
6,364,800,000 \times 4—25,459,200,000.

That is to say, twenty-five billions, four hundred and fifty-nine millions, and two hundred thousand caterpillars and other insects destroyed in a year! If these estimates seem large, we must remember that the circulation and respiration of birds are extremely rapid; and of course the consumption of food rapid in proportion.

Here is no "sickly sentimentality," but plain, economical facts, based upon observation. Shall we spare the crows and other birds a little corn and fruit; or shall we kill them, and revive the famines of the East and the ravages of other days?

Not long since, says the *Newark Mercury*, we witnessed the "bringing up by hand" of several orphan song-birds which had lost their parents, probably by the gun of some vagabond "sportsman." They were amply supplied, as was thought, with food, but by and by one began to languish, and at length died. On a post-mortem examination it appeared that the creature had been famished—nothing was in his crop or other passages. A hint was taken to supply the table of the others more liberally, for they had already showed similar symptoms of failing in health. This was done, and the quantity of insects and other food they consumed was wholly unexpected. They threw at once. We were thus convinced that birds, especially song-birds, enjoyed excellent appetites, and required a most generous diet, as human opera singers are known to do.

It is for men to turn this voracity to their profit, if they please. The owners of land can have birds, or they can have destructive insects; it depends upon them to choose which. If they like vermin on the trees and crops, on the tops, the branches, roots, everywhere, then they will get rid of the birds, of course.—*Western Farmer's Magazine.*

HOW TO MAKE ELDERBERRY WINE.—To 15 lbs. of berries take 15 lbs. of white sugar, add enough water to make the same to five gallons. Mash the berries, press and strain them, then add the sugar and water; let it stand in a tub or vessel three days; take off the skum, then put the wine into a strong vessel, tightly bunged, until fermentation ceases, and then bottle if desired. It should stand six months before being bottled, as it gives it a better flavor being in a cask.

The Corn Crop—The Pork Trade Prospectively.

During the past week we have received information, from various localities in the West, regarding the present state of the corn crop, and not a little about hogs. Without going into detail, we will give the points in a brief summary. In this State, except in light sandy soils, the corn crop is much better than was expected a month ago, and, generally speaking, is a full average, taking into consideration the greater breadth of land planted. In light sandy soil, however, it never recovered from the effects of the drought in July, and in all such cases the yield will not be over half an average; but the quantity of such land is small, and consequently the effect will not be felt.

In Indiana, the crop is excellent, and in all the Wabash country is unusually heavy, the ears being longer and better filled than usual. Indeed we have no complaints from any portion of that State; in all parts, the crop appears to be satisfactory. A good crop of wheat has been sown, and it looks well.

In Illinois, except in a few counties in the northern portion of the State, where it was injured by frost, the crop is fair, in many places good, and in all good rich corn lands, heavy. It is not yet fully matured, but the present weather is very favorable, and a large quantity that it was supposed would not mature before the frost would come, is now nearly out of danger, and generally exceeds the expectations of the farmer.

In Iowa, there is considerable variety in the crop. In the northern portion of the State, we hear of the injury done by the frost about the 1st of September, and some represent it serious, whilst others say it was but slight, as the stalk and ears were not injured, only the leaves. We have not heard from this State fully enough, as yet, so as to be able to speak of the crop very definitely.

In Missouri, the crop is pretty good; though like Iowa, we have not heard from many points in that State.

In Kentucky, the crop is represented fair average, and is fully matured, the quality being excellent.

In Virginia, the corn crop, we learn, is a partial failure, and not over two-thirds of last year's crop.

We have no very definite advices from Tennessee, but from what we have, our impression is, the crop is moderately good, though in some places it is short, consequent upon the drought.

In all the places we heard from, hogs are being generally fed with great care and industry, and it is exceedingly difficult to purchase stock hogs, showing that the owners feel satisfied they are fully able to feed all they have. The reverse was the case at this time last year. In many places the farmers have been feeding with the green corn since the 1st of September. In some parts of Indiana stock hogs are scarce and in demand, as high as 4½c. gross have been paid for them. There seems to be no speculation going on, and we hear of no contracts being made. The impression is general with the farmers that they will obtain high prices for their hogs, but all those who went in so freely last fall, are now holding off. The indications are, that the number of hogs brought

to market will be as great as last year, and that their condition will be far better.

In this market there have been no contracts made, so far as we have heard, though there are buyers for November at \$5.75, and we understand that one party offers \$6; but it is generally supposed that they want them to fill those contracts made at \$6.25 to \$6.75 last season, for delivery the coming November. The present active demand for bacon, and bareness of the market for hams, together with those contracts, it is supposed, will make the market open high, probably \$6, as many think, but the greater majority of dealers are determined to hold back until prices rule at a safer point, and this point is fixed in their minds at \$5 or thereabouts.—*Cin. Price Current.*

Agricultural Convention at Nashville.

Why have agriculturists exercised so little influence upon the policy of the State? By each successive Legislature the claims of this predominating industry are ignored, and all other interests but those which concern the great body of the people receive attention. Has this fact never been forced upon the attention of country members? We have an agricultural committee appointed, but who has ever seen a report? What suggestion has ever been made for the advantage of planters? When have even statistics of production been gathered with that minuteness which is necessary to render them valuable?

We are glad to see the agriculturists of the Southwest arousing to the necessity of some public concerted action to advance their peculiar interests. The experience possessed by individuals that may be developed by a convention of farmers and planters, in regard to modes of cultivation, methods of reinvigorating lands, the use of machinery, and the subject of drainage alone, if made the property of the whole country, would increase its wealth and prosperity.

Agricultural education is also more important than many suppose. To all our higher schools and colleges an agricultural department should be added to fit the embryo farmer for the intelligent cultivation of his lands. Yet, scarcely a school of this kind is to be found throughout the country. A convention of planters would not pass by this improvement, and the result of concert on their action would be a radical change in the education of our sons.

We are therefore pleased to see a call made for a convention of planters and farmers, to be held at Nashville. We of the South have much to learn to be independent of other States. The present small but successful attempts to raise our own stock, grain, and supplies of every kind, must become the general policy of planters. The diffusion of the profitable results of plantation management which contemplated a complete supply from each farm of all that is necessary for the use of those upon it, would induce a repetition of the experiment until he could export grain, corn, meat, and stock, without seriously diminishing our amount of cotton, sugar, rice, tobacco or hemp.

The Nashville convention of planters is a step in the right direction. It is an attempt to effect by association here, what has been accomplished elsewhere.

We hope our planters will not consider the movement unworthy their attention, but that each parish of Louisiana will be represented there.

We shall not despair of seeing most prosperous agricultural, horticultural and floral exhibitions, in which the astonishing wealth of production of this State shall be developed, if sufficient interest is taken in this convention to ensure a full State delegation.

The wealth of Louisiana is in her fruitful fields. We ought to make the subject of agriculture a prominent one in our public discussion and even in our politics. Legislation is needed for its development. The State should nurse every attempt to multiply staples or to secure better crops. The country has the greatest interest in directing the action of its representative body intelligently in favor of this species of industry, than in the selection of Governors, State officers, or United States Senators.—*N. O. Picayune.*

The Noble Earl and the Honest Farmer.

A farmer once called on the late Earl Fitzwilliam to represent that his crop of wheat had been seriously injured in a field adjoining a certain wood, where his lordship's hounds had during the winter frequently met to hunt. He stated that the young wheat had been so cut up and destroyed that in some parts he could not hope for any produce. "Well, my friend," said his lordship, "I am aware that we have done considerable injury; and if you can produce an estimate of the loss you have sustained, I will repay you." The farmer replied, that anticipating his lordship's consideration and kindness, he had requested a friend to assist him in estimating the damage, and they thought, as the crop seemed quite destroyed, £50 would not more than repay him. The Earl immediately gave him the money. As the harvest however approached, the wheat grew, and in those parts of the field which were most trampled, the corn was strongest and most luxuriant. The farmer went again to his lordship, and being introduced, said, "I am come, my lord respecting the field of wheat adjoining such a wood." His lordship immediately recollected the circumstance. "Well, my friend, did not I allow you sufficient to remunerate you for your loss?" "Yes, my lord, I find that I have sustained no loss at all, for where the horses had most cut up the land, the crop is most promising, and I have therefore, brought the £50 back again." "Ah!" exclaimed the venerable Earl, "that is what I like: this is as it should be between man and man." He then entered into conversation with the farmer, asking him some questions about his family—how many children he had etc. His lordship then went into another room, and returning, presented the farmer with a check for £100, saying, "take care of this, and when your eldest son is of age, present it to him, and tell him the occasion that produced it." We know not which to admire the more, the benevolence or the wisdom displayed by this illustrious man; for, while doing a noble act of generosity, he was handing down a lesson of integrity to another generation.—*British Workman.*

The Swallow.

The dear little swallow is one of our earliest wing-birds. Sir Humphrey Davy calls him "the glad prophet of the year, the sweet harbinger of the best season." He delights to build his nest near the dwelling place of man, on the low mossy eaves of barns or sheds, or on the brown old rafters themselves.

"The swallow privileged above the rest,
Of all the birds is man's familiar guest."

It is delightful to watch a company of them as they soar and dive and skim along, "sweeping with easy wing the meadow's face," catching with lightning swiftness the little insects sporting in the pleasant air, and then as if by mutual consent, at once alighting on some high elm, or roof, then for a minute to rest their busy wings. But even while you are watching, they dart again into the free air and renew the seeming sportive chase.

The swallow is on the wing nearly fifteen hours a day, and is always catching at tiny gnats and flies, which it destroys in great numbers. It does not seek a new home every May day, but comes back year after year to the same old home-stead, and with a little plastering, and general repairing with moss and clay outside, and a new carpet of hair and feathers inside, it is quite as good as ever. Then the old surroundings are just the same, the neighbours too have all come back, and they chirp and twitter and gossip away as merrily as little birds can be.

When the young birds are ready to fly, the old bird seems to give them instruction, and I have often listened to what seemed real conversation, carried on between the mother and little ones as they sat side by side on a railing. Presently the admonitions seemed over, and the swallow would try his wings for the flight of a yard or so. Then followed a reproof, or approval, I could not make out which, being unacquainted with the language, and then another attempt. The parent bird still cares for them a little while after they leave the nest, and a row may often be seen sitting patiently on a rail beside the water, waiting patiently for her to bring them their supper. It is curious to see how strict she is to feed them in exact rotation, being quite unmoved by any greedy clamorer who does not wish to wait his turn.

A gentleman in England once watched a pair of swallows building a nest in an old house opposite his window. But when they had finished it, a pair of house robbers came in the shape of two lazy sparrows and drove out the industrious swallows. They made a stout resistance, but to no purpose, so they gave up the matter for the time.

After a while the sparrows grew hungry, and as they were off in search of food, the indignant swallows came with some friends and entirely broke down the ill-gotten nest. The sparrows found poor accommodation when they returned, and the rightful owners soon went to work and put up a new house on the same site.

A very wonderful instance of the great sagacity of this bird is related by one, who had an opportunity of watching it for several years in succession. The swallows built a nest on the edge of a lime kiln, but when it was nearly done the warmth caused it to fall down. A second, and a third were built with the same result. At last

they brought a new sort of clay that would stand heat, and made a nest which remained firm. The next year they came again, and used the same material, also a third, but they were probably destroyed before a fourth, as they never came again.

The habits of birds form a very curious study, and are a beautiful illustration of the power, and kindness of the Creator who bestows such wisdom even upon the feeblest of his creatures.—*N. Y. Chronicle.*

"Live" Farmers.

We presume there are few who will question our statements, when we say that there is great need for more "live" farmers in all parts of Iowa. It is not necessary to travel many miles in any direction from Des Moines, to find men who are in no way entitled to the above appellation.

It is true, that in traversing the country, we meet many *real farmers* who have cast aside all prejudices, who cheerfully admit there is much to learn, and who are continually on the alert for information, from all sources, connected with their most noble occupation; but how often do we find those ding-dong, dead and alive creatures—not farmers—who, if not materially enriched by the product of a single field, must quarrel with providence, the country, climate, or anything else, rather than their own carelessness or fogism. We have farmers amongst us who are intelligent as well as industrious, who instead of croaking and complaining are working and studying; men who watch the seasons as well as the markets, and sow and reap at the times indicated by nature; who plant corn before mid-summer, and mow their grass (and plenty of it too) before winter, but there is also little difficulty in finding in this country, those who discard all ideas of advancement in any department of their business, and even free in acknowledging that they follow in the footsteps of their illustrious "daddys." Talk a few moments with men of this class, and you will find that (to use a slang phrase,) "they know it all." There is no "book larnin'" that can enlighten *them*. A treatise on agriculture or horticulture, would be of as much service to them as a cook book would be to a Pawnee Indian, for "daddy did *so* and he knewed." When we visit the farms of such men in harvest time, we find that the drought, the frost, or the wet, which may or may not have slightly injured neighbouring crops, has fallen heavily upon poor daddy's son, and almost demolished his little half planted, half worked crop, while his neighbors enjoy a fair harvest from a variety of products. These men scratch the ground and trust to providence with whom they are soon at loggerheads, and they are soon ready to sell out and go to Missouri, or some where else.

May providence assist them in affecting speedy sales, and grant them a safe journey to their "affinities," whom they will surely meet in some parts of Missouri, should be the daily prayer of all who wish to see a fine agricultural region well stocked with active, intelligent **LIVE FARMERS**—*Pioneer Farmer.*

We tell our *Pioneer* friend that there are "live" farmers wanted elsewhere than in Iowa. They are wanted everywhere.—*Ed. AME. FARMER.*

SUNDAY READING.

In the agricultural process, there is much that is left to be done by nature, and in a way that the workman knoweth not how; nor is it at all necessary that he should. He puts forth his hand, and sets a mechanism agoing—the principles of which, he, with his head, is wholly unable to comprehend. The doing of his part is indispensable, but his knowledge of the way in which nature doeth her part is not indispensable. And accordingly, after he hath sown, he may go to sleep if he chooses. He hath done the palpable work, and he wisely meddles not with the profound speculation. The casting of the seed into the ground was his concern. The bringing forth of the fruit was what the earth did of herself; and by the operation of a physiology which he neither comprehends or cares for, a harvest produce is given to him as the return of his exertions.

Now it is even so in the work of spiritual husbandry. There is an obvious part of it, that is done by the agency of man; and there is a hidden part of it, that is independent of that agency. The first part may be done by a man, who is free from all that ambitious curiosity, that might have led him to pry into the mysteries of the second. Were this rightly attended to, it might save both parents and teachers a great deal of misplaced, and even mischievous anxiety. What more settled and reposing than the faith which a husbandman has in the constancy of nature. He knows not how it is; but on the strength of a gross and general experience, he knows that so it is. And it were well in a christian teacher to imitate this confidence. There is in it, both the wisdom of experience, and the sublime wisdom of piety. He plants and he waters, and he goes through all the human work of the spiritual husbandry; and then, he should commit it quietly and confidently, to Him who giveth the increase. He should not meddle with matters too high for him; and, on the principle of not pretending to be wise beyond the obvious lessons of Scripture or observation, he should cease his enquiries at the right point, and save himself from all the perplexities of restless and ungovernable speculation. There is great comfort in this exercise of faith; and, what is more, we promise it great efficacy. Be steadfast and immovable, and always abounding in your proper work. God will not be wanting in his. There is no danger, either of the processes of nature, or the processes of grace being suspended, because we have not been able to lift the veil which shrouds them from the eye of our intelligence. We have nothing to do, but to make right and conscientious use of the instruments which have been put into our hands, and to rest assured, that, if we labour in the Lord, our labour shall not be in vain.—*Chalmers.*

The metamorphosis of insects, showing forth the resurrection of the body and the life everlasting.

This process is found in so remarkable a manner in butterflies, that we see therein the resurrection painted before our eyes, and exemplified so as to be examined by our hands. To see, indeed, a caterpillar crawling upon the earth, sustained by the most ordinary kinds of food, which,

when it has existed a few weeks or months under this humble form, its appointed work being finished, passes into an intermediate state of seeming death, when it is wound up into a kind of shroud and encased in a coffin, and is most commonly buried under the earth, (though sometimes its sepulchre is in the water, and at others in various substances in the air,) and after this creature and others of its tribe have remained their destined time in this death-like state, to behold earth, air and water give up their several prisoners: to survey them, when, called by the warmth of the solar beam, they burst from their sepulchres, cast off their cementments, from this state of torpid inactivity, come forth, as a bride out of her chamber—to survey them, I say, arrayed in their nuptial glory, prepared to enjoy a new and more exalted condition of life, in which all their powers are developed, and they are arrived at the perfection of their nature; when no longer confined to the earth, they can traverse the fields of air, their food is the nectar of flowers, and love begins his blissful reign; who that witnesses this interesting scene can help seeing in it a lively representation of man in his threshold state of existence, and more especially of that happy day, when, at the call of the great Sun of Righteousness, all that are in the grave shall come forth, the sea shall give up her dead, and death being swallowed up of life, the nations of the blessed shall live and love to the ages of eternity?

But although the analogy between the different states of insects and those of the body of man is only general, yet it is much more complete with respect to his soul. He first appears in his frail body—a child of the earth, a crawling worm, his soul being in a course of training and preparation for a more perfect and glorious existence. Its course being finished, it casts off the earthly body, and goes into an inner state of being in Hades, where it rests from its works, and is prepared for its final consummation. The time for this being arrived, it comes forth clothed with a glorious body, not like its former, though germinating from it, for though “*it is sown an animal body, it shall be raised a spiritual body,*” endowed with augmented powers, faculties, and privileges commensurate to its new and happy state. And here the parallel holds perfectly between the insect and the man. The butterfly, the representative of the soul, is prepared in the *larva* for its future state of glory; and if it be not destroyed by the ichneumons* and other enemies to which it is exposed, symbolical of the vices that destroy the spiritual life of the soul, it will come to its state of repose in the *pupa*, which is its Hades; and at length, when it assumes the *imago* break forth with new powers and beauty to its final glory and the reign of love.

The Egyptian fable (as it is supposed to be) of Cupid and Psyche seems built upon this foundation. “*Psyche,*” says an ingenious and learned writer, “means in Greek the human soul; and it means also a butterfly,† of which apparently

*The ichneumon fly deposits her eggs in the caterpillar, which, when hatched, feed upon its substance, carefully avoiding the vital parts, so that the insect lives, but is unable to effect its change into the pupa state.

†It is worthy of remark, that in the North and West of England the moths that fly into candles are called *psyche*.

strange double sense the undoubted reason is, that the butterfly was a very ancient emblem of the soul—from the prevalence of this symbol, and the consequent coincidence of the names, it happened that the Greek sculptors frequently represented Psyche as subject to Cupid in the shape of a butterfly; and that even when she appears in their works under the human form, we find her decorated with the light and filmy wings of that gay insect.”—Kirby and Spence.

Improvement and Preservation of Cider.

BY PROF. E. N. HORSFORD, OF CAMBRIDGE.

The following question has been repeatedly addressed to the undersigned;

“May not the sugar prescribed in the recipe for improving cider, published by the Massachusetts Horticultural Society, be omitted, and the sulphite of lime added directly to the new cider?”

The reply may seem somewhat circumstantial, but it will avoid unnecessary details, and be as brief as the question permits.

The juice of the apple may be regarded as water containing grape sugar in solution, and albuminous substances in solution and suspension. The other ingredients, including the sources of the peculiar taste and bouquet, need not, for the purpose of this note, be taken into account.

Simple grape sugar dissolved in water does not ferment. Albuminous matters of fruit, on the contrary, dissolved or suspended in water, ferment spontaneously. But if grape sugar be dissolved in water containing albuminous matter, the sugar will ferment from contact with the fermenting albuminous matters. Cane sugar, under like circumstances, becomes first grape sugar, and then ferments. Starch experiences a like change. The first result of fermentation of the grape sugar is alcohol and carbonic acid. The second result is acetic acid, and requires exposure to the air.

There are, in the apple, three conceivable cases of relation of albuminous matter to sugar. First, when there is just sufficient albuminous matter to convert by fermentation all the sugar into alcohol and carbonic acid; second, where there is excess of albuminous matter; third, where there is excess of sugar.

The first case would yield, after fermentation was over, simple alcohol. The second would yield, alcohol and acetic acid—the latter to the exclusion of the former in some proportion to the excess of albuminous matter. The third would yield a mixture of sugar and alcohol.

The result, in the first case, would be a solution of alcohol with somewhat of the taste and flavor of the apple; that in the second would be cider vinegar, and in the third a kind of diluted cider cordial. As access to the air is understood in all the three cases, there would remain only so much carbonic acid as was due to its solubility.

Now we have an agent which will withdraw the albuminous matter (always in excess) from cider at will. If we apply it to the juice of the apple, as it falls from the press, we shall leave be-

hind sweetened water. If we withhold it altogether, we shall have acetic acid and water—or cider vinegar. If we apply it after fermentation has been some time in progress, without exposure to the air, we shall have a weak solution of alcohol and sugar. If, with exposure to the air, up to the time the agent is applied, we shall have sugar, alcohol, and a little acetic acid. If now, with an invariable excess of albuminous matter, we add more sugar, we shall have more alcohol, with the same measure of acetic acid as before.

It is not unusual to add sugar to the juice of the grape in the production of certain kinds of wine. Here follow the proportions of these ingredients in several well characterized fermented wines. A sample of cider is given for comparison. [Acetic acid is replaced to some extent by tartaric, malic, and other acids.] The alcohol is given in per cents. by volume, the sugar in per cents. by weight, and the acid in the number of parts by weight, of caustic potassa, required to neutralize 100 parts of the wine:—

NAME.	Alcohol.	Sugar.	Acid.
Cider.....	5.04	0.00	44
Claret.....	9.11	0.00	38.52
Burgundy.....	10.13	0.00	38.61
Johannisberg, 1842.....	10	0.42	38.52
Hockheim, 1846.....	11.06	0.44	37
Marcobrunn, 1822.....	12	0.34	40

It will be seen that these fermented wines, aside from their peculiar taste and bouquet, are nearly allied to cider. The wines have more alcohol, and some of them have sugar. The claret and Burgundy in the samples analyzed had no sugar, because it had, by fermentation, as in the case of the cider, been converted into alcohol, and to some extent into acetic acid. To secure the increased quantity of alcohol and sugar, provision is made in the receipt above alluded to; and to guard against excessive fermentation, by which more alcohol than is desirable, or more acetic acid than is acceptable, would be produced, sulphite of lime is employed.

Time is given in the receipt, for the well-known reason that, as a general thing, age improves all beverages in which the proper proportions of ferment and sugar are present. The finer products that are especially acceptable to the palate require a more nicely regulated temperature and generally more care. They are easily destroyed by rapid and excessive fermentation, by too high heat, by the presence of the juices of defective fruit, by unnecessary exposure to the air, and by various other agencies—to guard against which, altogether, requires a degree of qualification that science without experience will probably never be able to give.

It will be seen from the above that the sugar may be omitted, and the sulphite of lime added directly to the apple juice, as it flows from the press, or at a period a little later when fermentation has improved its taste; but at the best it will produce a beverage inferior to that in which more vinous fermentation is permitted, and extended through a longer period. It will resemble cider that has been boiled to coagulate the albuminous matters, or filtered through sand, to separate them. It will be comparatively insipid.

More sulphite of lime will be required if the sugar be withheld. Fortunately, as the sulphite is rendered soluble only in the presence of acid, an excess will do no harm.—*Druggists' Circular*.

(souls), perhaps from the old notion that the souls of the dead fly about at night in search of light. For the same reason, probably, the common people in Germany call them *geister* (*geistchen*).

Wholesale Produce Market.

Prepared for the American Farmer by ELLIOTT & HROWN, Producers and Commission Merchants, 59 Exchange Place.

BALTIMORE, October 24, 1859.

BUTTER.—Ohio, in bris. and kegs, 11 to 13½; Virginia and Pennsylvania, in kegs, 12 to 16; Glades 14 to 16; New York or Goshen 18 to 24; Roll 15 to 18.

BEESWAX—36 cts.

CHEESE.—Eastern 11, Western 10.

DRID FRUIT.—Apples \$1.68, Unpeeled Peaches \$3; Peeled do. \$6.

Eggs—16 cents.

FEATHERS—45 to 50 cents for good to prime.

HONEY—20 cents.

LARD.—Bris. 12, kegs 13, jars and other country packages, 13.

TALLOW—11 cents.

Wool.—Unwashed 24, tub washed 34, pulled 34.

Baltimore Markets, Oct. 24.

There is little change to note in the markets, except some little improvement in grain, as we have anticipated.

COTTON.—The demand for Cotton is confined to the wants of manufacturers. The figures show a falling off in price, and we quote the various grades of Upland, Gulf and Western as ranging from 9 to 13 cts.

FISH.—Mackerel, \$9.25 to \$9.50 for No. 3; \$13.50 to \$14 for No. 2; \$15.50 to \$16 for No. 1. Alewives, \$4 to \$4.50. Herrings, \$2.75 to \$3.50 for Halifax, and \$4.75 to \$5.25 per bbl. for Labrador.

FOUL.—We quote Howard street Super, \$5.12½; Extra, \$5.50 to \$5.62½; Ohio Super, \$5.12½; Extra, \$5.50. City Mills Super, \$5; Extra, \$6. Family Flour, \$7.25 to \$7.75 for the different brands.

Rye Flour and Corn Meal.—We quote Rye Flour at \$4.50. Corn Meal at \$4.37½ to 4.50 per bbl.

Buckwheat Flour, \$5 to \$5.50 per hundred pounds.

GRAIN.—Wheat—Good to fair Red, \$1.16 to \$1.17; prime, \$1.22. White, \$1.25 to \$1.30 for fair, and \$1.35 to \$1.40 for good to prime.

Corn.—We quote white at 95 to 97; yellow, 95 to 96.

Oats.—Oats, 39 to 41 for Maryland; 41 to 43 for Pennsylvania.

Rye.—We quote Rye at 90 to 93 cents.

PROVISIONS.—Bacon.—Bacon is dull with a declining tendency. We quote Shoulders at 8½ and Sides at 10½.

Pork.—Mess, \$15.50; Prime, \$11.25; Rump, \$11.50.

SEEDS.—Clover seed, \$5.50 for prime new. Timothy, \$3.25 to \$3.50, retail.

TOBACCO.—The demand for the better qualities of Maryland has been moderate, and but little inquiry is made for the commoner descriptions. As the receipts are becoming light the stocks are not allowed to accumulate. We quote frosted at \$2; ground leafat \$2 to \$7; common at \$2.50 to \$3.50; middling \$4 to \$4.50; good middling \$5 to \$5.50; good leaf \$6 to \$6.50; and fine at \$7 to \$12. There is nothing doing in Ohio Tobacco, and in the absence of transactions we are unable to give reliable quotations. Kentucky Tobacco is very quiet, and we are without any sales to report. Fine qualities are scarce—We still quote common lugs at \$4.25 to \$4.75; good do. at \$5.25 to \$6.50; inferior leaf at \$5.75 to \$6.25; good do. at \$6.50 to \$7.50; fine at \$7.50 to \$9; choice at \$10 to \$12; and rich heavy Kentucky at \$7 to \$12.50. The inspections of the week are 695 hds. Maryland, 37 hds. Ohio, and 17 hds. Kentucky—total 749 hds.

GUANO AND OTHER FERTILIZERS.—We have no change in price of Guano and Fertilizers. The season is pretty well over. The supply on hand in the summer of Peruvian Guano has been entirely cleared out, but the fresh arrivals in September and October kept the market supplied. We quote Peruvian at \$61 to \$62 per long ton, according to quality—the latter being for a single ton and upwards. For less than a ton, at the rate of \$66 per ton of 2000 lbs.; California or Elide Guano, \$45 per short ton; Manipulated, \$47; Super-Phosphate, \$46; Mexican A.A., \$30 to \$32; Mexican A., \$16; Sombrero, \$35 per long ton, and Colombian \$40, and very scarce. Ground Bones, \$25 to \$27 per 2000 lbs. and very scarce.

HAY AND STRAW.—Hay is selling for \$16 to \$17 for baled; \$18 to \$15 for loose. Straw, \$15 for Rye; \$19 to \$22 for Oat, and \$9 to \$10 per ton for Wheat.

MILL FEED.—Mill Feed is selling at 16 to 17 cents for Brown Stuff; 32 to 33 for Middlings.

WOOL.—There is a fair business doing in Wool, but the market for it is not particularly active. We quote today: unwashed at 24 to 26 cts.; tub washed at 34 to 37 cts. for common; 38 to 40 cts. for Extra; No. 1 pulled at 35 to 32 cts.; pulled Merino at 34 to 37 cts.; and fleece Wool as ranging from 32 to 48 cts.

CATTLE MARKET, Oct. 20.—There was a large increase to-day in the receipts of Beef Cattle, the offerings at the scales amounting to 1,600 head, against 900 head last week. The demand was fair, but in consequence of the large supply prices dropped off 25 cts. per 100 lbs. Of the Cattle received 150 head were driven to Philadelphia; 50 were sold to country graziers, 300 were left over unsold, and the remaining 1,100 head were taken by Baltimore butchers at prices ranging from \$2.75 to \$4.25, averaging \$3.50 per 100 lbs. gross.

HOGS.—Hogs are in good supply, but the market for them is quiet and rather heavy. We still give them as ranging from \$6.50 to \$7.50 per 100 lbs. net.

SHEEP.—Sheep are still selling at from \$2.50 to \$4.50 per head as in quality.

NEW ADVERTISEMENTS.

Burns, Russell & Co.—Drain Pipes.

Benteen, F. D.—Pianos and Melodeons.

C. M. Saxton, Barker & Co.—Agricultural Publishing House.

Dunnington, W. A.—Ground Plaster.

Fitzhugh, Johnson—Farm in Virginia.

Glenn, John—Southdowns for sale.

Harshbarger, A.—Juniata Nurseries.

Hedge, Free & Co.—Kitchen Mill, Grist Mill, and Iron Amalgam Bells.

Nash, E.—A Book for Every Horseman.

"Office"—Farm in Maryland.

Spear & Forney—Boyer & Bro's Patent Farm Grist Mill.

Whitman, E. & Co.—Agricultural Implement Warehouse.

Wood, C. A. & Co.—How to Preserve Cider and Wine. Wills, Dr. S. E.—Fruit and Ornamental Trees.

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